AUGUST 25, 1952

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

OHIO STATE UNIVERSITY

SPECIAL REPORT . . .
Coated Abrasives—P. 92

DECONTROL TALK LOUDER
End of CMP Next Spring? p. 63

TITANIUM AND ITS ALLOYS
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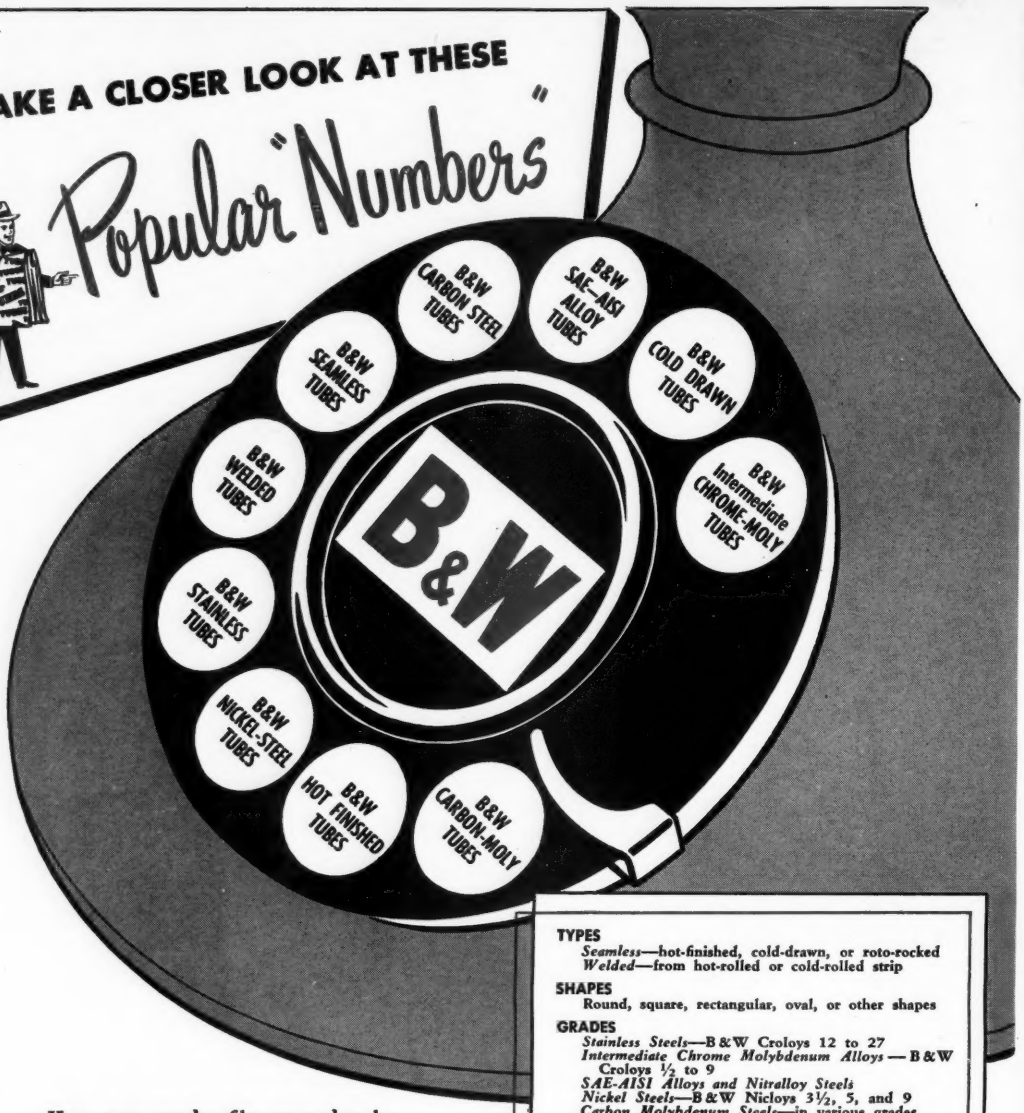
TAKE A CLOSER LOOK AT THESE "Popular" Numbers



TYPES
Seamless—hot-finished, cold-drawn, or roto-rocked
Welded—from hot-rolled or cold-rolled strip

SHAPES
Round, square, rectangular, oval, or other shapes

GRADES
Stainless Steels—B&W Croloys 12 to 27
Intermediate Chrome Molybdenum Alloys—B&W Croloys ½ to 9
SAE-AISI Alloys and Nitralloy Steels
Nickel Steels—B&W Nicloys 3½, 5, and 9
Carbon Molybdenum Steels—in various grades
Carbon Steels—in various grades

SIZE RANGE
Up to 9⅝ inches outside diameter in a wide range of wall thicknesses.

SURFACE FINISHES
As rolled, as drawn, as welded, flash removed, turned, scale-free and polished.

SPECIFICATIONS
Made to any of the standard specifications such as those of the ASTM and U.S. Government.

QUALITY
Open-hearth and electric-furnace steels, including aircraft and magnaflux qualities.

CONDITION
Unannealed, annealed, tempered, normalized, or otherwise heat-treated as required.

FABRICATION
Upsetting, swaging, expanding, bending, safe-ending, and machining.

Keep your vendor files up-to-date by writing today for Bulletin TA-1559 to match B&W's tubing facts to your requisition requirements. To save time, and to keep paperwork at a minimum, call in Mr. Tubes—your B&W Tube Representative—to sit down with you and your company engineers. Because he keeps close to all kinds of pressure and mechanical tubing applications, B&W customers earn extra dividends resulting from prompt action and effective help.

B&W SEAMLESS and WELDED TUBES

TA-1677 G

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION

General Offices & Plants
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich. • Houston 2, Texas • Los Angeles 17, Cal. New York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Cal. Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla

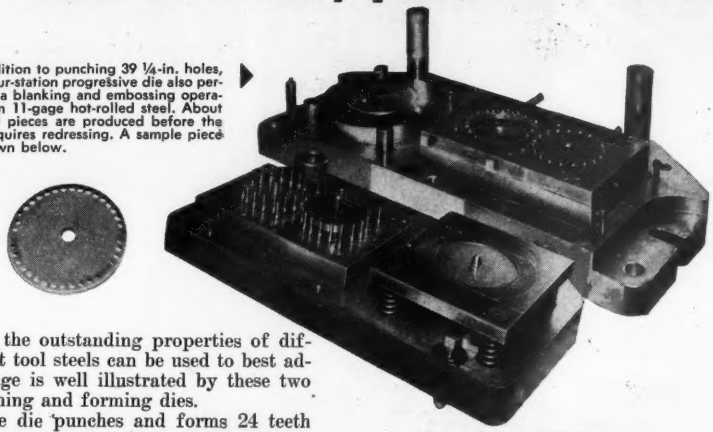
Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BTR and LEHIGH H team up to form 24 teeth, punch 39 holes

In addition to punching 39 ¼-in. holes, this four-station progressive die also performs a blanking and embossing operation on 11-gage hot-rolled steel. About 25,000 pieces are produced before the die requires redressing. A sample piece is shown below.



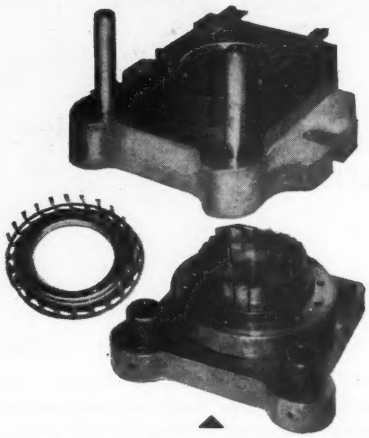
How the outstanding properties of different tool steels can be used to best advantage is well illustrated by these two punching and forming dies.

One die punches and forms 24 teeth and punches three ¼-in. holes, all in a single operation. The other die punches 39 holes of ¼-in. size, blanks out the piece, and embosses it.

The punches of both dies are made of BTR, our manganese-chromium-tungsten oil-hardening steel with a hundred and one uses. It has plenty of wear-resistance, and it takes the shock of the punching operation. BTR is easy to machine and heat-treat. And it's economical.

The die rings for both dies are made of Lehigh H, our general-purpose grade of high-carbon, high-chromium steel. This air-hardening grade is first choice wherever it's essential to have minimum distortion during heat-treatment. In addition, Lehigh H provides long-wearing properties for those long runs. You just can't get a better tool steel when you need accuracy and long wear.

Both these Bethlehem grades are stocked in popular sizes by Bethlehem tool steel distributors in principal cities everywhere, and in our mill depot.



This die punches and forms 24 teeth in 18-gage cold-rolled steel and punches three ¼-in. holes. About 50,000 pieces are produced before redressing.

METALLURGICAL SERVICE — Bethlehem metallurgists are on call whenever you have problems. They'll assist with the selection of tool steel, or its heat-treatment, forging, grinding, machining, design, etc.

Sometimes it takes more than just good tool steel

In a customer's plant the other day we asked the shop boss the name of the tool steel he used for a blanking die which we saw in his shop.

"Sorry, but I just can't tell you. All I know is, it works fine. We used to have a lot of trouble with that die . . . and then one of your Bethlehem men came in here one day. He worked with the die all day, and he cured the trouble for good."

Later we checked with the toolroom and found that the grade used for the die was BTR, our general-purpose, oil-hardening tool steel — and a mighty reliable one, too. The fact that the superintendent didn't know its name was probably a compliment. It was doing a good job. He no longer had to worry about it. So the name didn't matter.

The point is, it takes more than the best tool steel to make some tools and dies work right. Sometimes what counts most is the service that goes with the tool steel — our vast experience in applying each grade, the sales service, metallurgical service, and distributor service.

"Service" is often a glib promise, an intangible sales point. But we at Bethlehem look on service as an inseparable part of our product, something that goes along with every bar of steel we ship.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Special treatment often permits using carbon tool steel

We have run across several customers who use carbon tool steels for tools and dies that others would ordinarily make from oil- or air-hardening tool steels. This is real economy.

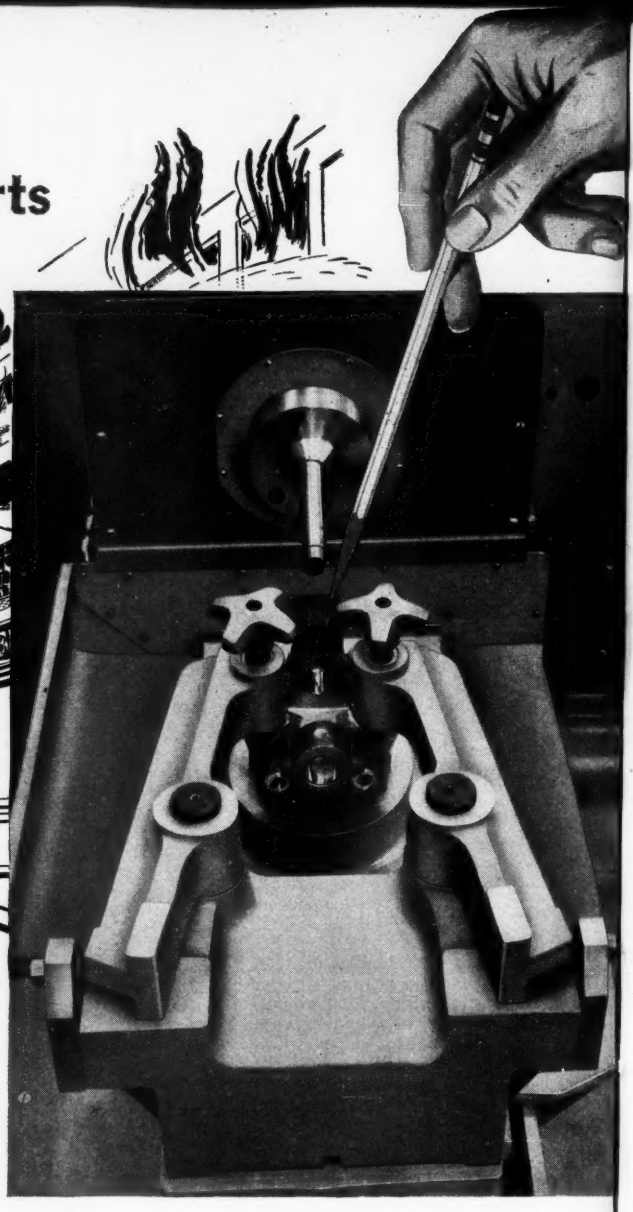
The secret in most cases is in the design of the tool. Avoided are: sharp corners, small projections from heavy sections, numerous holes with both thick and thin webs. If the tool can be designed to minimize such hazards, carbon tool steel is often an effective solution.

When there are many holes in a die made from carbon tool steel, a good heat-treater will carefully pack the holes with asbestos or fire clay, then heat carefully and uniformly to obtain a well-hardened die. This precaution reduces distortion during heat-treatment and avoids causing cracks in quenching.

HEAT AND TEMPER COLORS SHOWN ON HANDY CHART

Want to estimate the temperatures of heated steel? Our convenient color chart is printed in natural tones; heat colors are accurately reproduced on one side and temper colors on the other. Write for your free copy to Publications Dept., Room 1042, Bethlehem, Pa.

Here's How Heald precision finished parts help fight a fire



Heald Bore-Matic speeds precision production of steering knuckles for fire trucks

● Whether it's a major disaster or a grass fire in Farmer Brown's pasture, fire-fighting equipment must be ready to roll anywhere on a moment's notice. Here extra dependability and precision manufacture are vital. And that's where Heald fits into the picture.

The installation shown above, for example, is used to precision borize steering knuckle assemblies for fire trucks. This Heald Model 221 Bore-Matic is arranged to permit a choice of two borizing methods — either by boring both bushing holes simultaneously with a double-tooled quill; or by boring the front hole first, with a jump cam for rapid traverse between holes. The work is clamped and located in an easy-loading platen type fixture which accommodates several different sizes of assemblies. The result — a high precision, high production operation that helps assure a continued flow of essential equipment.

Remember — when it comes to precision finishing, it pays to come to Heald.

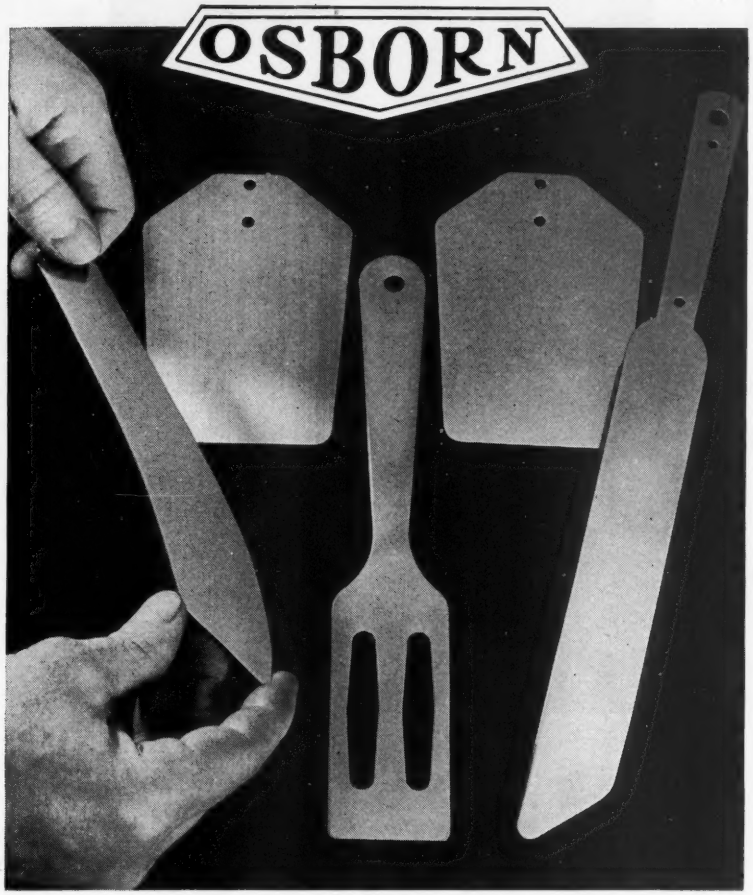
HEALD

Heald machines speed the nation's production

THE HEALD MACHINE COMPANY

WORCESTER 6, MASSACHUSETTS

Branch Offices: Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York



Want to take a slice off your finishing costs?

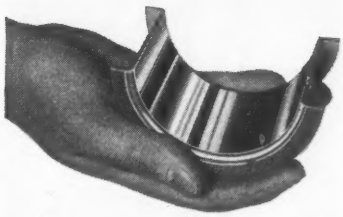
Here's the key to better product-finishing and lower costs: Have your nearby **O**sborn **B**rushing **A**nalyst study your present finishing operations. In hundreds of plants, he is applying the latest developments in brushing techniques to improve finishing quality and increase production.

For example, the stainless steel kitchen utensils shown above are being finished to satin smoothness with greater ease and uniformity . . . the result of techniques with Osborn Brushes and cut-and-color compound.

Your **OBA** will gladly give you assistance! Call him today or write *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Dept.* 787, *Cleveland 14, Ohio.*

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES



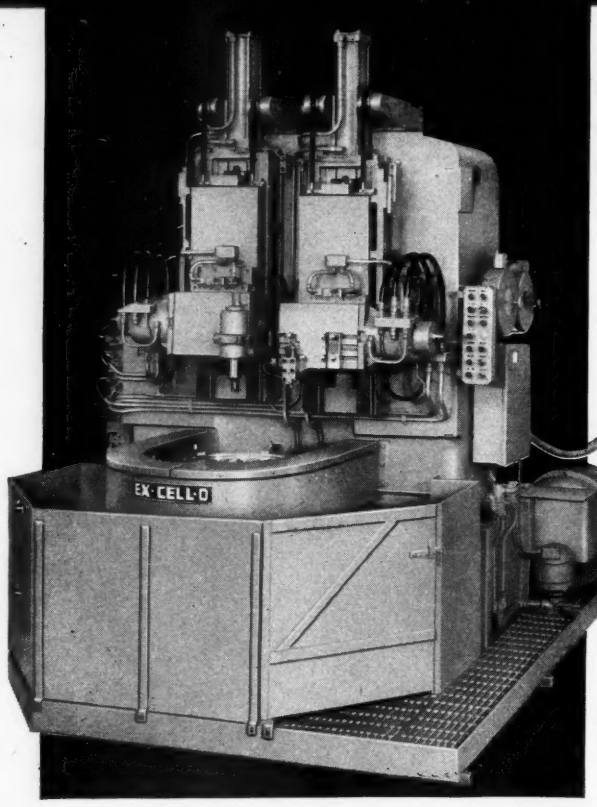
TWO JOBS AT ONE TIME. A manufacturer of automotive sleeve bearings cleans steel-backed, babbitt-lined strips continuously in an automatic machine. Osborn Master® Wheel Brushes remove all dirt, rust and metal particles from the steel surface. At the same time, Osborn Monarch® Sections clean the babbitt side.

CENTERLESS BRUSHING. This centerless grinder does double duty in the production of nickel-moly steel pump rods. As a grinder, it rough-grinds, then finish-grinds the rod. Then wheel is replaced with an Osborn Fascut Brush for obtaining of smooth finish. Makes rods and pump packing last longer.

STRATEGISTS. Experienced Osborn research men and design engineers help your engineers develop basic brushing methods and brushing machines to solve cleaning and finishing problems. Their services are yours as a part of the comprehensive service offered by your **O**sborn **B**rushing **A**nalyst. Call your nearby **OBA.**

New!

VERTICAL PRECISION BORING MACHINE BY EX-CELL-O



The new Ex-Cell-O Style 425 Vertical Precision Boring Machine.

XLO

EX-CELL-O for PRECISION

A Flexible, Automatic Machine for Precision Boring, Turning, Facing

Developed by Ex-Cell-O, this standard Style 425 Vertical Precision Boring Machine is massive and versatile. It has a heavy-duty, high-speed work spindle and rigid tool slides for close-tolerance work with a fine surface finish. It's designed for accurate production work on large parts.

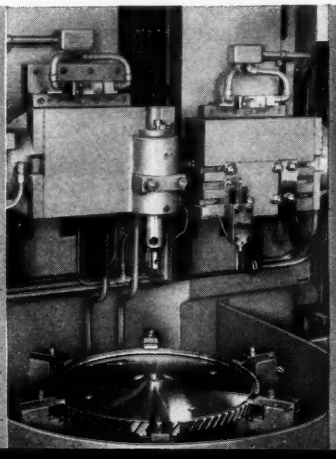
The heavy cast base supports a column on which two vertical slides are mounted, each carrying a cross slide. Slides are operated by large hydraulic cylinders and move on hardened and ground steel ways. Vertical slides are fully counterweighted. All these features mean smoother operation.

The large work spindle supports a 36-inch diameter table having T-slots for mounting fixtures. The table is driven through a precision worm at variable speeds up to 500 rpm.

The machining cycle is completely automatic, including movements of vertical and cross slides, changes in work speeds, flow of coolant, and lubrication.

For more information and complete specifications on this new machine call in your Ex-Cell-O representative or contact Ex-Cell-O in Detroit today.

Close-up view of the Style 425 equipped for operations on an aluminum jet compressor wheel. Tools in the left slide precision bore, counterbore and chamfer the central hole, then feed-face the small hub. The right slide finishes a rabbet in the large outer rim.



12 Features OF EX-CELL-O'S NEW MACHINE:

- Massive, Rigid Construction
- Easy Loading and Unloading
- Variable Speeds to 500 RPM
- Counterweighted Slides
- Large Hydraulic Cylinders
- Hardened and Ground Ways
- Flexible Automatic Cycles
- Automatic Speed Changes
- Automatic Coolant Control
- Automatic Lubrication
- Conforms to J.I.C. Standards
- Skilled Operator Unnecessary

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

52-23

This Week in Metalworking

STEEL

Vol. 131 No. 8 Aug. 25, 1952

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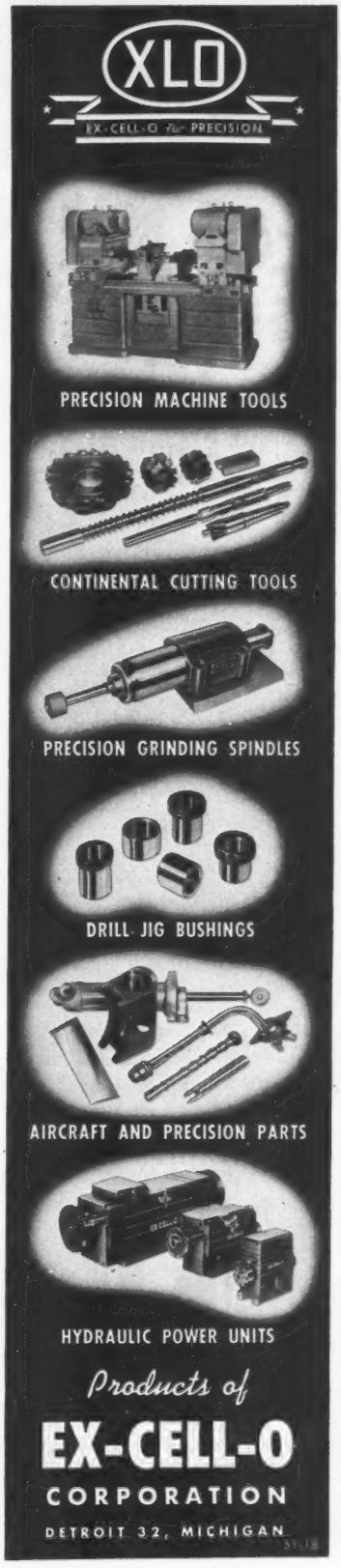

National Metal

LEADING SPECIALISTS IN

COLD ROLL FORMING

SINCE 1902

Announce

THE AVAILABILITY OF A PORTION OF OUR MODERN FACILITIES FOR D.O. PRODUCTION

Our broad metal forming experience covers shapes that can be fabricated by Cold Rolling steel, bronze, aluminum, stainless steel.

Comprehensive statement of our available capacity at your request. With requests for specific quotations, please include your blue print.

National Metal
PRODUCTS CO.
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NATIONAL METAL PRODUCTS COMPANY

Since 1902 Since 1902

Manufacturers of

• Zinc and Bronze Weatherstripping • Stampings • Metal Frame Screens • Special Rolled Mouldings • Bronze and Aluminum Thresholds • Aluminum Awnings • Window Guard Units for Mobile Machine Shop • Zinc Products • Quonset Hut Window Units • Industrial Polishing.

Behind the Scenes...

Cover Stuff

The cover picture this week was picked up by Pittsburgh Editor Bob Hall while he was working on the abrasives story in this issue. It's from the files of Minnesota Mining & Mfg. Co., St. Paul. Picture was actually taken on the job at Tool Steel Gear & Pinion Co., Cincinnati.

That belt you see is flying around at the rate of 6000 surface feet per minute. It's putting a high finish on a pipe straightener roll. The rolls are ground to a tolerance of plus 0.001-inch before polishing. The belt's job is to put a good finish on the part while removing a minimum of stock. Job undoubtedly deserves all the attention the operator is giving it.

No Luck

Geraldine, our night editor, saw in the paper the other day where a 14 year old lad was driving the car without a license. As he was cruising along he tipped a pop bottle for a swig and sideswiped an oncoming car. Occupant of the other car—the county sheriff. You can't win.

Accolade

Editor-in-Chief Earl Shaner's editorial in the July 21 issue, titled "Now or Never," has met with great response. D. R. Webster, president of Reznor Mfg. Co., Mercer, Pa., says its puts "in the most expressive form we've seen the reasons why the American way of life" is jeopardized by the current course the U. S. is taking.

Reznor reprinted the editorial for distribution to its friends, customers and employees.

Calendar

What day of the week will Christmas fall on in the year 2000? Was the Declaration of Independence signed on Monday or Thursday? When is the next Friday the 13th? Arthur A. Merrill, a General Electric Co. engineer has the answer at his finger tips to all those vital questions. His copyrighted brain-child is a new calendar that extends from 1753 (the year the Gregorian system was adopted) to 2059, but Mr. Merrill says it could easily be extended to an indefinite future year.

He sent us a copy of his calendar, only 6¾ inches by 8 inches in size. At first all we saw was a hodgepodge of numbers and letters. But we followed the simple directions and found that July 4, 1776 fell on a Thursday, that Christmas will fall on a Tuesday in the year 2000 and that the next Friday the 13th will be Feb. 13, 1953.

Perils of the Press

Eagle-eyed readers of the Aug. 18 issue may have noted a discrepancy between what the cover said about price rises for metal consumers and what the inside story had to say about the same subject. The cover said the pass-through of higher costs would probably be 60 per cent. The story said 80 per cent.

All that came about because of the gyrations going on in Washington. Until two hours before our press time, the 60 per cent was correct. Then came one of those about-faces in OPS with which we are now so familiar. The figure changed to 80 per cent. We could change the story and the inside art work, but the cover had gone to press long since.

Puzzle Corner

In the problem of August 11, the answer as you saw almost immediately, was that the dog traveled 60 miles. First in with that answer were Everett L. Sweet of Standard Gage Co., Albert Romeo of Denison Eng. Co., Lois M. Reinart of Service Iron & Steel Co., Lewis D. Rice of Timken Roller Bearing Co., G. W. Frederick of Republic Steel Corp., T. S. Bean of Barber & Ross Co., Robert W. Huff of Canton, O., and Blaine McKee of M. K. Mellott & Co.

Here's one: Two soldiers visit a canteen to buy cigarettes. The first buys one less than half the cigarettes in stock. The second buys one less than half the remainder. If 7 packages were left, how many were in stock at the beginning?

Shrdlu

(Metalworking Outlook—Page 55)

Wellman will build it

Special Cranes
Ore Bridges
Gas Producer Plants
Charging Machines
Car Dumpers
Gas Flue Systems
Gas Reversing Valves
Coke Pushers
Mine Hoists
Skip Hoists
Clamshell Buckets
Forging Manipulators

Wellman ore bridges

New 577 foot span speeds handling of ore

Wellman 17 net ton ore bridge. Total length 577 feet.

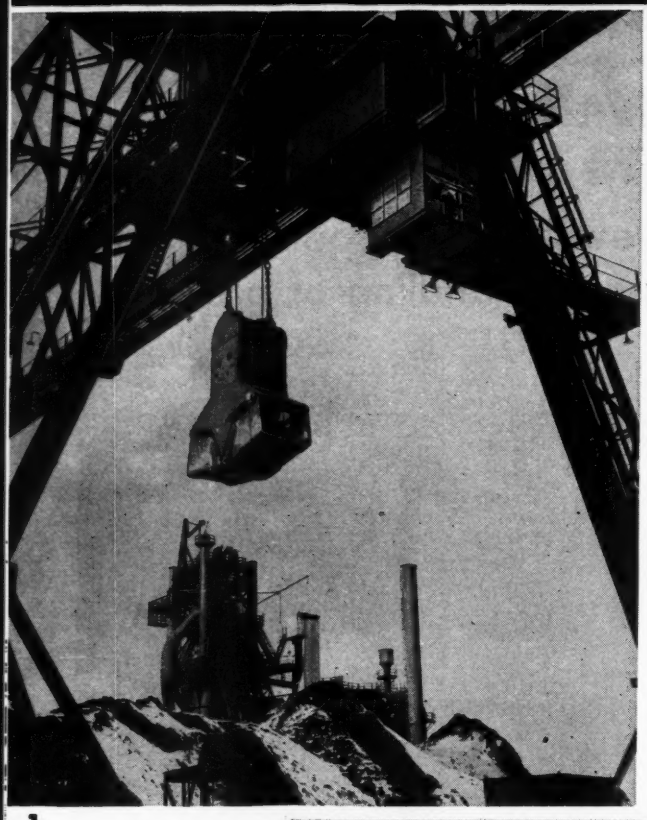
● This new installation, built for one of America's largest steel companies, embodies many engineering features which speed the handling of ore and curtail costs.

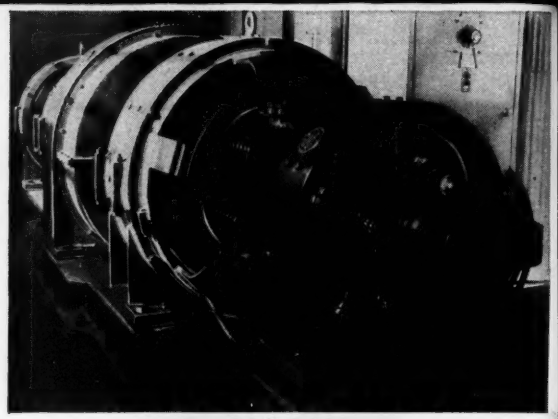
Wellman's more than half-century of experience is at *your* service . . . to engineer and build equipment to improve your operations.

THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

THE FINEST BRIDGE E





VARIABLE VOLTAGE MOTOR GENERATOR SET

The use of the multi-unit Motor Generator Set with Amplidyne Drive provides adjustable voltage direct current to the various motors producing smooth starting and stopping and the fastest possible operation. Use of this MG Set, built by General Electric Co., provides greater efficiency than the rheostatic scheme by allowing greater horsepower output from the motors. The use of this system eliminates approximately two-thirds of the control weight normally carried on the trolley. Other advantages of this variable-voltage system are: reduced space requirements; lower maintenance cost; less power loss; and elimination of heavy copper conductors.

1.

1. An artistic view of the 12-Ton Ore and Coal Bridge, showing the Blast Furnace and Ore Pile in the background.

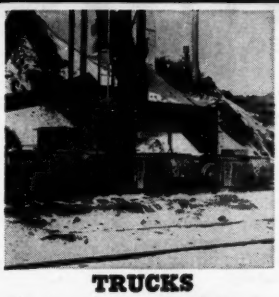
2. The entire Bridge showing bucket in position to unload ore from a lake vessel.

2.

This Ultra-Modern Bridge designed and erected by HEYL & PATTERSON Contains More Firsts and More "Advanced Improvements" Than Any Other Ore and Coal Bridge in Operation Today.

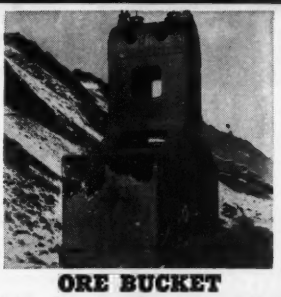
E EVER BUILT

Designed and Erected by
Heyl & Patterson for
DOMINION FOUNDRIES and STEEL, LTD.
Hamilton, Ontario, Canada



TRUCKS

The entire bridge is mounted on fabricated steel Trucks of extra heavy sections with 24 wheels under the pier leg and 24 under the shear leg. Trucks are arranged in 3 four-wheel, two-axle units, and each unit is driven by a separate motor. The standard-gauge, wide-rail spacing permits the bridge to run on crushed slag ballast.

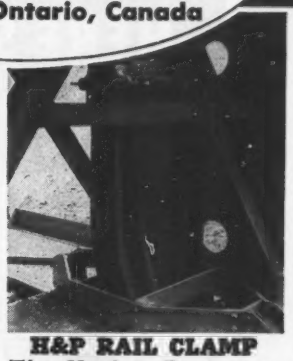


ORE BUCKET

The Heyl & Patterson 12-ton Buckets used on this bridge are built to withstand extremely rough usage. All moving parts are connected by heavy steel pins having removable bushings and the bucket spades are equipped with heavy manganese steel digging lips. The coal buckets and ore buckets are interchangeable.

FABREEKA MOUNTING

Fabreeka Mounting is used in place of the conventional spring assembly. Fabreeka Mounting cushions and dampens the trolley; increases life of the Collector Shoes; absorbs and reduces vibration; requires no lubrication.



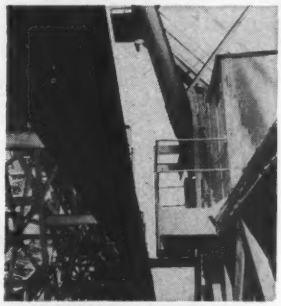
H&P RAIL CLAMP

The Heyl & Patterson patented Rail Clamp is a never-failing safety device. Whenever the power circuit is opened the wedge-shaped counter-weight descends and forces the hardened serrated tool steel clamping plates against the sides of the runway rails.

This modern 12-ton ore and coal bridge is a practical example of how Heyl & Patterson constantly plans ahead to provide the utmost in new and practical features for every project . . . features that enable any H. & P. installation to operate smoothly, quickly, safely and economically.

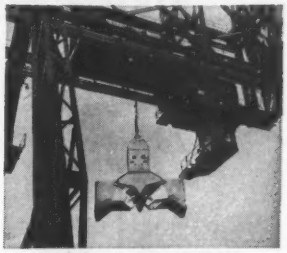
Notice the many new and improved features of this bridge that contribute to its outstanding performance. The compact Turn-Table; the Fabreeka Mounting; the Variable-Voltage, Amplidyne Controls; the increased use of Welding . . . all designed to give this bridge better, longer performance with less maintenance cost than any other bridge.

When faced with a Heavy Bulk Materials Handling problem, think of Heyl & Patterson— the firm with experience of the past and an eye to the future.



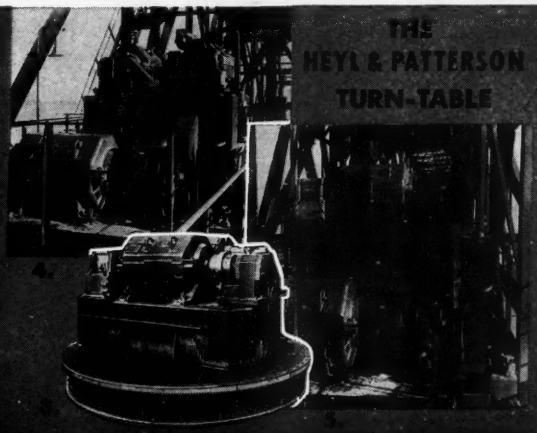
BRIDGE RUNWAY CONDUCTOR RAILS

A great saving in weight is made through the use of aluminum conductor rails. The power, 550 Volt, AC, is transmitted through the Collector Shoes.



MORE WELDING

The extensive use of welding on this bridge provides a saving of weight and added strength throughout the entire bridge. Notice the lack of rivets in the shear leg.



This bridge is the first installation utilizing the recently-designed Heyl & Patterson two-motor hoist mounted on a turn-table. The turn-table speeds the clean-up operation during unloading by allowing the bucket to dig from any angle in the hold of the vessel.

Because of its compact design, the trolley with the turn-table arrangement uses no more than 5% extra space between the trolley runway rails than is required for the standard trolley. This arrangement does not sacrifice accessibility of parts for inspection or repair.

The assembly is mounted on a welded tower member which is, in turn, carried on rollers supported in the trolley frame. 100° of motion can be obtained in either direction. The rotate motion is obtained by a motor driving through a reducer to a final bevel gear reduction.

3. Turn-Table. 4. The axis of the drum parallel to the trolley runway. Note wiring and gear casing. 5. The axis of the drum parallel to the bridge runway.

Heyl+Patterson, Inc.
"SINCE 1887"

Heavy Bulk Materials Handling Equipment
All The Way from Design to Erection

IN STEEL FABRICATION...

HERE'S HOW NELWELD SPEEDS PRODUCTION

AN ELECTRIC ARC WELDING PROCESS

END-WELDS STUDS TO STEEL IN A SPLIT-SECOND

ELIMINATES DRILLING, TAPPING, HAND WELDING

REDUCES MATERIAL HANDLING—TAKES THE TOOL TO THE WORK

NELWELD

SAVES STEEL—ELIMINATES HEAVY BOSSES AND FLANGES

IMPROVES PRODUCT DESIGN AND QUALITY

A NELWELD CLINIC CAN SHOW YOU—

right in your own plant, how you can benefit from this modern fastening method.

Write today for the Nelweld Clinic brochure to Lorain, Ohio.

Fasten it Better... at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS
TO THE EDITORS

STEEL Takes a Stand

Your editorials, "As the Editor Views the News," are a most welcome addition to my morning mail. Undoubtedly you receive many comments on them and, since they are circulated among industry, these comments should be quite complimentary.

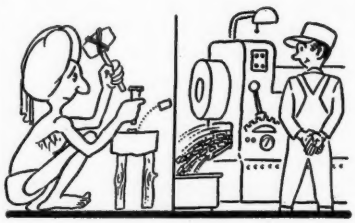
But, congratulations once more on your editorials and we sincerely hope that you will continue the crusade. Perhaps through your efforts other editors may have the courage to take a positive stand.

Arch Horner
Casting Engineers Inc.
Chicago

Does Capital Make Jobs?

The cover of the Aug. 11 issue of STEEL showing that capital makes jobs at $13,600 per is another presentation of a common illusion.

For a number of years since the great depression, capital has been declared as the originator of opportunity of employment. The Democrats have been trying to make jobs with government capital and private industry claiming it as their privilege.



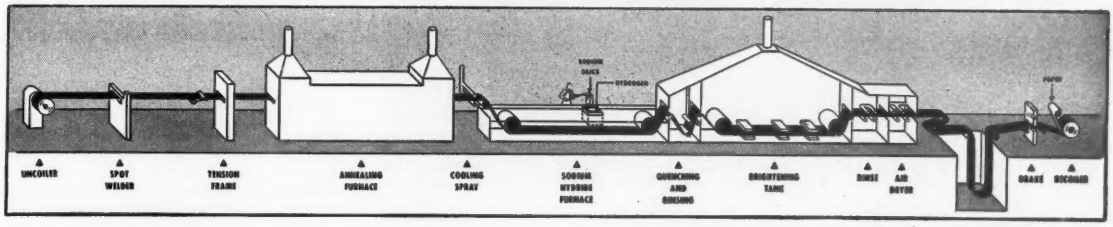
I suggest that neither public nor private capital creates jobs. Jobs, or the opportunity to serve ourselves or our fellow men through exchange, comes naturally. Capital, in the form of wealth used to produce more wealth, changes the classification of skills within an opportunity, and giving it at the same time more efficient production.

Opportunity for employment or service naturally exists, as men mold natural resources to meet their own needs or the needs of others, limited only by restricting the use of nature or restricting trade between men.

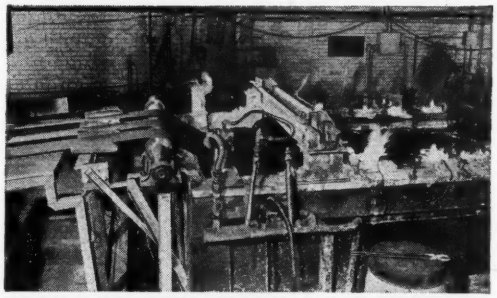
Benjamin F. Smith
1801 Breton Rd.
Grand Rapids, Mich.

• *We think the statement is nearer the truth if it were to read "Capital Helps Make Jobs." That sign displayed on the machine on the Aug. 11 cover is the verbatim reporting of a sign actually used at an open house. Your "restricting use of nature" is in itself usually caused by insufficient capital, as witness the situation in some of the underdeveloped countries of the world. Other factors also help create jobs, of course—freedom of trade, scientific research, natural*

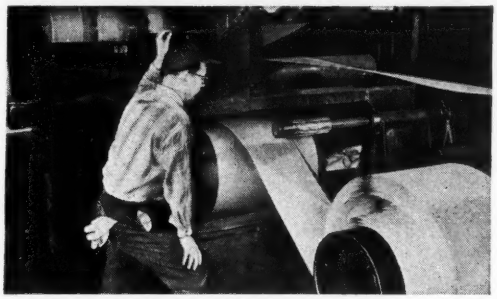
Remove Scale CONTINUOUSLY with the Du Pont Sodium Hydride Descaling Process



Successful operation in leading mills proves the adaptability of hydride descaling to continuous systems. Used in tandem with annealing, the sodium hydride process thoroughly descales stainless steel strip—in gauges of 0.010" to 0.125" and above. Particularly outstanding results are obtained with types 400 stainless steel, including the buffing grades. One fast "trip" through the hydride bath removes all scale . . . leaves the surface clean and bright, uniformly free from pits, etching and intergranular attack. So fast and thorough is hydride descaling, that the system is practicable for all common annealing speeds.



STAINLESS STEEL STRIP enters the hydride bath from the annealing furnace. Continuous hydride descaling equipment increases production and saves floor space . . . is easy and economical to operate.



BRIGHT, CLEAN STRIP—uniformly free of scale, smut and intergranular attack—leaves the hydride bath. The strip is perfectly prepared for finishing by buffing, for further processing or fabrication.

OUTSTANDING ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- **HIGH-SPEED OPERATION**—Descales in shortest practicable time cycle . . . can be adapted to manual, conveyorized or continuous operation.
- **ECONOMICAL TO OPERATE**—Permits savings in acid and metal . . . handles large volume of work in small space . . . is non-electrolytic.
- **HANDLES DIFFERENT METALS**—Alloy steel, stainless steel, nickel, copper, titanium and cobalt bearing alloys can be efficiently descaled—even in the same bath.
- **UNIFORM DESCALING**—All surfaces are uniformly descaled without need for special racking procedures.
- **USES LOW-COST EQUIPMENT**—(Carbon Steel Tanks). **NO HYDROGEN EMBRITTLEMENT.**
- **NO LOSS OF BASE METAL**—Bath action is reducing. Reaction stops when oxygen is removed from scale, eliminating pickling losses, etching and pitting.

FOR MORE INFORMATION about the Du Pont Sodium Hydride Descaling Process, get in touch with our nearest district or sales office or send the coupon below to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DISTRICT AND SALES OFFICES:

Baltimore • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit Kansas City* • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco

*Barada & Page, Inc.

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning_____products.

*Name*_____ *Position*_____

*Firm*_____

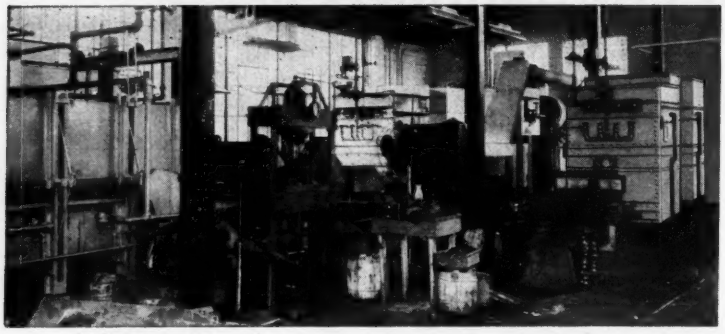
*Street and No.*_____

*City*_____ *State*_____

DU PONT
Sodium hydride process for positive descaling

DU PONT 150th Anniversary

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



Niagara Aero Heat Exchanger quickly pulls down the initial peak load of heat in quenching . . . and saves cooling water

Accurate control of quench bath temperatures and quickly effective capacity to handle the initial peak load of heat in quenching prevents production set-backs, increases the output of your heat treating department, prevents oil fires, saves you losses from rejected parts.

Niagara Aero Heat Exchangers give you this control in both furnace and induction hardening methods. They prevent both over-heating and over-cooling of the quench bath. Hundreds of heat treaters know they prevent many troubles, constantly improve quality and increase production.

They quickly pay for themselves by saving cooling water coils and extend your quench capacity without extra water or cooling tower.

Write for Bulletin #120 giving complete information.

NIAGARA BLOWER COMPANY

Over 35 Years' Service in Industrial Air Engineering

Dept. S, 405 Lexington Ave. New York 17, N. Y.

Experienced District Engineers in all Principal Cities of U. S. and Canada

LETTERS
TO THE EDITORS

growth in population. But, capital is at least as important as any factor.

Address: U.S .Army

Your July 14 issue carried an article titled "Rammed Shell Cases" (p. 90). I am interested in the details of this operation and would like the address of the Army Chemical Center in Maryland.

C. R. Myer
manager
Abrasives Division
Elgin National Watch Co.
Elgin, Ill.

• *Write to Captain Earle J. Towsend, Chief Technical Information Officer, Department of the Army, Office of the Chief Chemical Officer, Washington 25.*

Photo Story for Distribution

We would like permission to reproduce Mr. R. A. Buchanan's article "High Speed Photography: Steel Research Tool" (July 7, p. 90).

R. C. Billingham
research laboratory
United States Steel Co.
Kearny, N. J.

• *Permission granted.*

Weekly Companion: STEEL

You will be pleased to know our manufacturing and purchasing people subscribe to your publication and consider it of great value to them in their daily work. Invariably, they bring to my attention articles of information and particular importance to our business.

J. B. Ward
president
Addressograph-Multigraph Corp.
Cleveland

I personnally have received STEEL weekly over a good many years and expect to continue with our subscription to your very fine publication. The factual information contained therein is very helpful and it is referred to almost constantly for information concerning the steel industry.

J. H. Johnson
purchasing agent
Crompton & Knowles Loom Works
Worcester, Mass.

Standard Reference Work

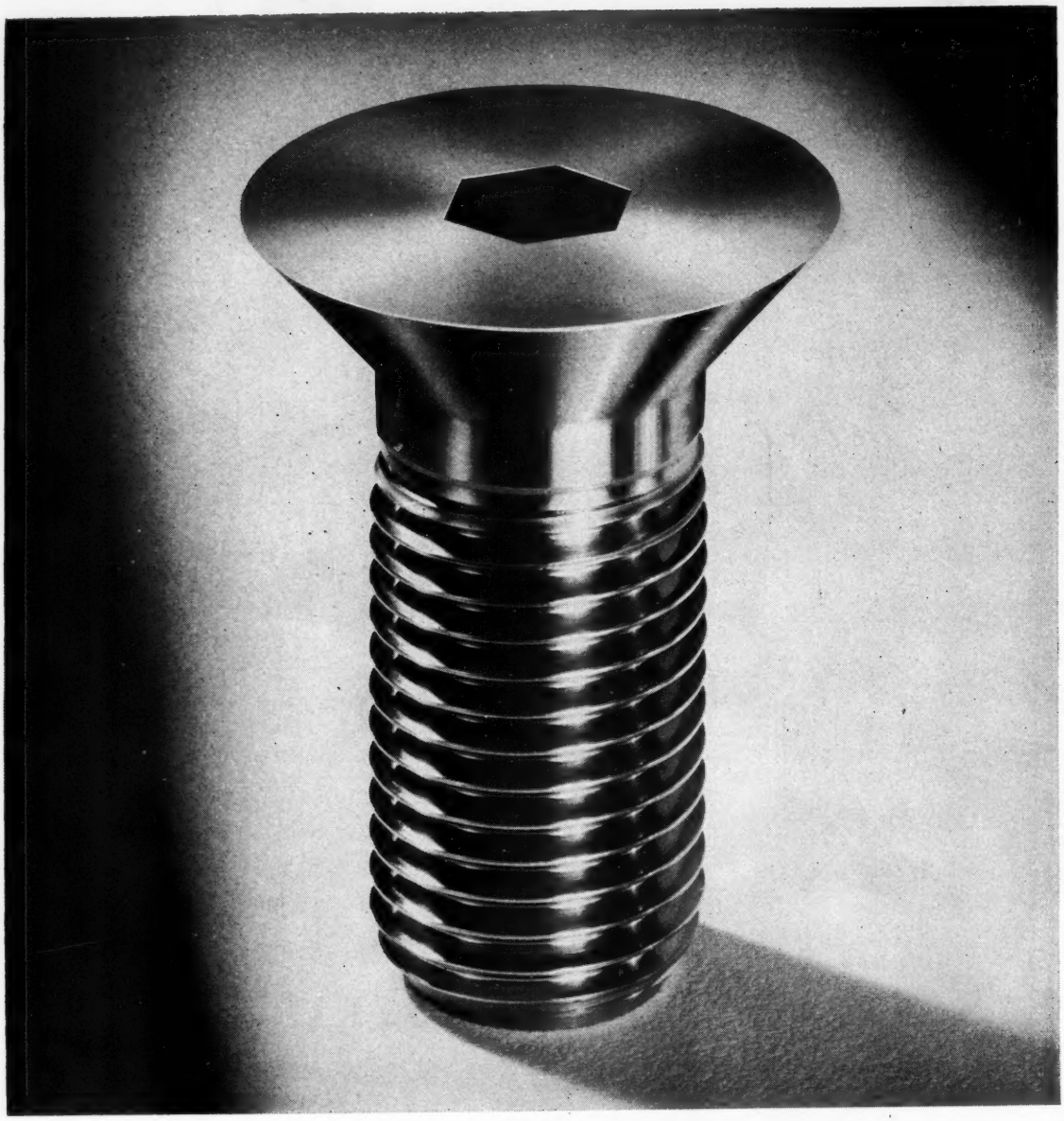
You will be glad to know that each issue of STEEL comes across my desk and your annual January issue is the standard work of reference.

G. G. Beard
president
United Engineering & Foundry Co.
Pittsburgh

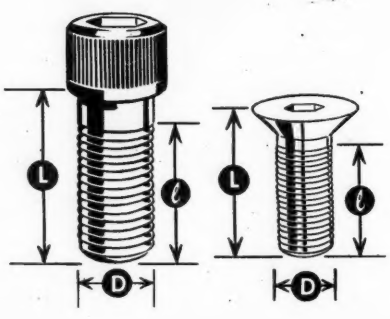
The better the strip, the better the product—and the easier production. Those are two important reasons why manufacturers find it advantageous to use Weirton cold-rolled strip steel. Its excellent drawing and forming qualities, its constant uniformity, promote plant efficiency and economy by reducing spoilage and tool expense. In short—Weirton strip boosts both quantity and quality.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION



UNBRAKO® SOCKET SCREW DIVISION



WHY IS IT THAT 75% OF ALL SPECIAL SOCKET SCREWS ORDERED FROM SPS HAVE ODD THREAD LENGTHS?

75% of all screws classified by SPS as *specials* have odd thread lengths, probably because of widespread unfamiliarity with thread formulas.

In many cases, *standard* UNBRAKO Socket Screws can be substituted. They will save you time and money. They are available from the stocks of your local distributor. Ask him or write us for your copy of UNBRAKO *Standards*. STANDARD PRESSED STEEL Co., Jenkintown 33, Pennsylvania.

What Are the Standard Thread Lengths?

The authority for the thread formulas used by SPS and other threaded fastener manufacturers is Handbook H28, Screw Thread Standards for Federal Services, National Bureau of Standards. It reads:

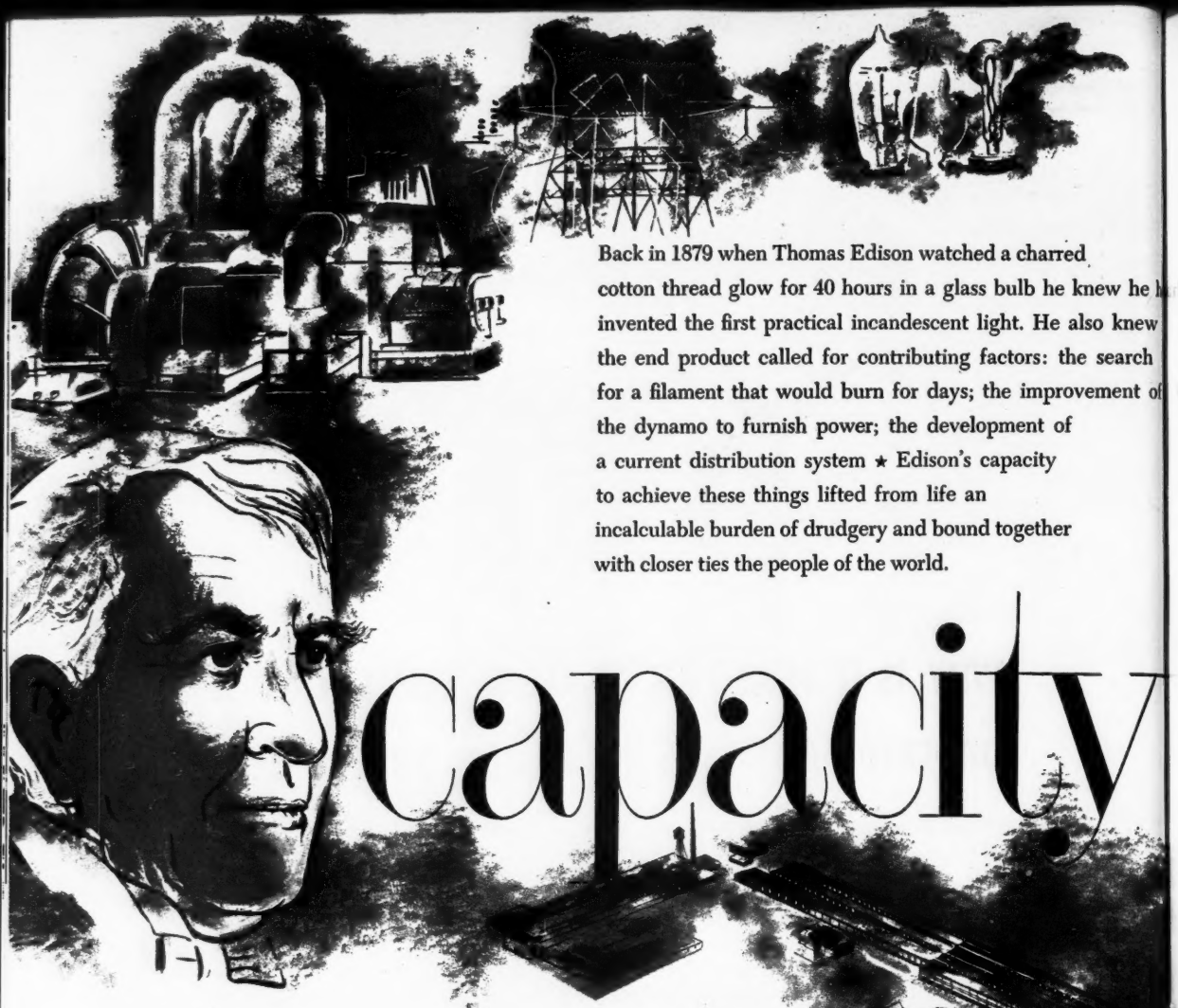
The length of the screw thread is measured from the extreme point to the last usable thread and shall be as follows:

For American National Coarse Thread Series	ℓ = 2D + ½" (where this length of thread would be greater than half the screw length). ℓ = ½L (where this length of thread would be greater than 2D + ½").
For American National Fine Thread Series	ℓ = 1½D + ½" (where this length of thread would be greater than three-eighths the screw length). ℓ = ¾L (where this length of thread would be greater than 1½D + ½")

Screws too short to allow application of these formulas shall be threaded as close to the head as practicable.

SPS
JENKINTOWN PENNSYLVANIA

Knurled Head Cap Screw | Self-Locking Set Screw | Flat Head Cap Screw | Shoulder Screw | Dowel Pin



Back in 1879 when Thomas Edison watched a charred cotton thread glow for 40 hours in a glass bulb he knew he had invented the first practical incandescent light. He also knew the end product called for contributing factors: the search for a filament that would burn for days; the improvement of the dynamo to furnish power; the development of a current distribution system ★ Edison's capacity to achieve these things lifted from life an incalculable burden of drudgery and bound together with closer ties the people of the world.

capacity

Today, more than ever, the need for better, faster, and cheaper methods of production is paramount in the thinking of men who make things from metal. For nearly half a century many of these men have come to rely on Van Huffel's ability to conceive and capacity to achieve miracles in metal — Van Huffel cold formed shapes and tubing.

Van Huffel

TUBE CORPORATION · WARREN, OHIO

WELDED · LOCK SEAM · OPEN SEAM · BUTTED TUBING · METAL SHAPES · MOULDINGS

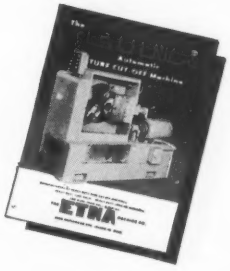
The LATHE TYPE CUT Means

ACCURACY.. MINIMUM BURR..

ETNA FULLY AUTOMATIC TUBE CUT-OFF MACHINES

SPEED...ECONOMY...EFFICIENCY...VERSATILITY

The Etna Cutoff is completely automatic and hydraulically operated. The tube remains stationary . . . it's the cutter head that rotates . . . making a lathe type cut with *minimum burr.* Random long lengths of tubing can be recut to precise lengths ranging from .125 to 48 inches with a length tolerance of less than 5 thousandths of an inch with the Etna Automatic Tube Cut-Off Machine. Write for the Etna Tube Cut-Off Brochure.



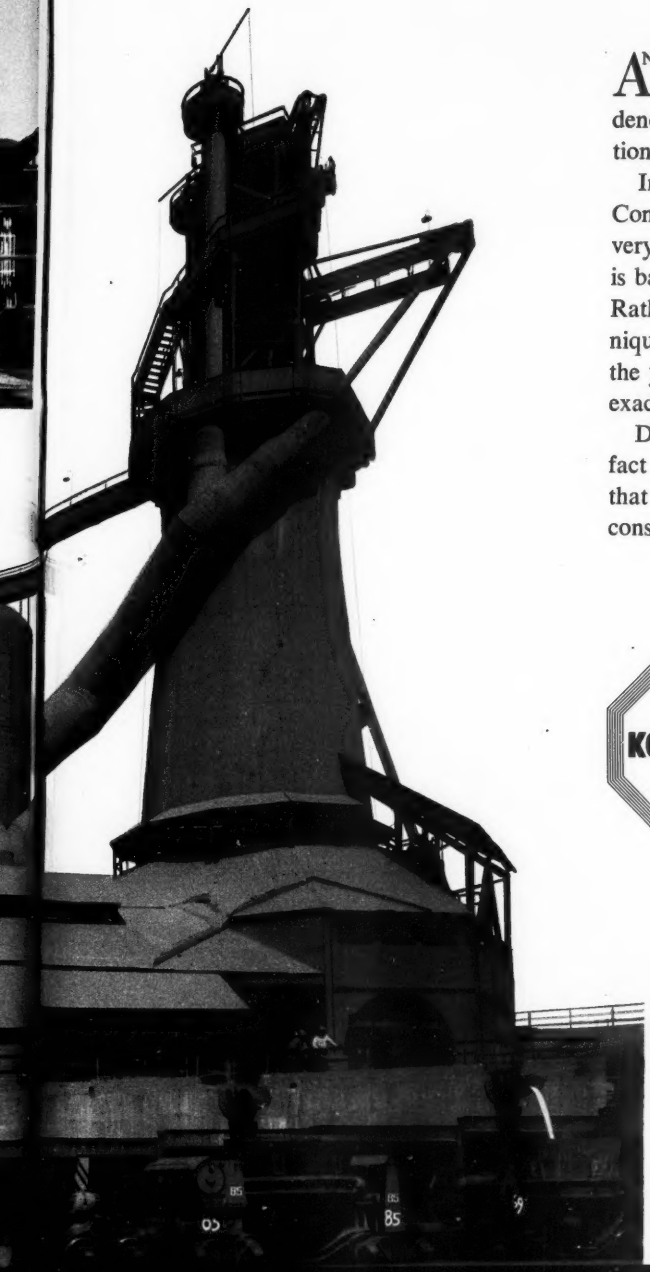
MANUFACTURERS OF HEAVY DUTY TUBE CUT-OFF MACHINES...
HEAVY DUTY TUBE MILLS...HEAVY DUTY SWAGING MACHINES...
FOR MORE THAN HALF A CENTURY

THE ETNA MACHINE CO.

3402 MAPLEWOOD AVE., TOLEDO 10, OHIO

Typical Koppers-Becker Coke Ovens. This battery of 65 ovens carbonizes approximately 1,400 net tons of coal per day at a coking rate of 1.08 inches per hour.

the PLUS FACTOR in Koppers Engineering Services



ANY company, engaged in metallurgical construction, must have engineering skill. It is the *common* denominator that goes into every one of our construction assignments.

Included in Koppers Metallurgical Engineering and Construction Services is a value that is of intangible, but very real benefit to the company's customers. This value is based on more than fundamental engineering skills. Rather, it stems from all of the varied knowledge, techniques and background that have been acquired over the years by Koppers Engineers in handling the most exacting metallurgical construction projects.

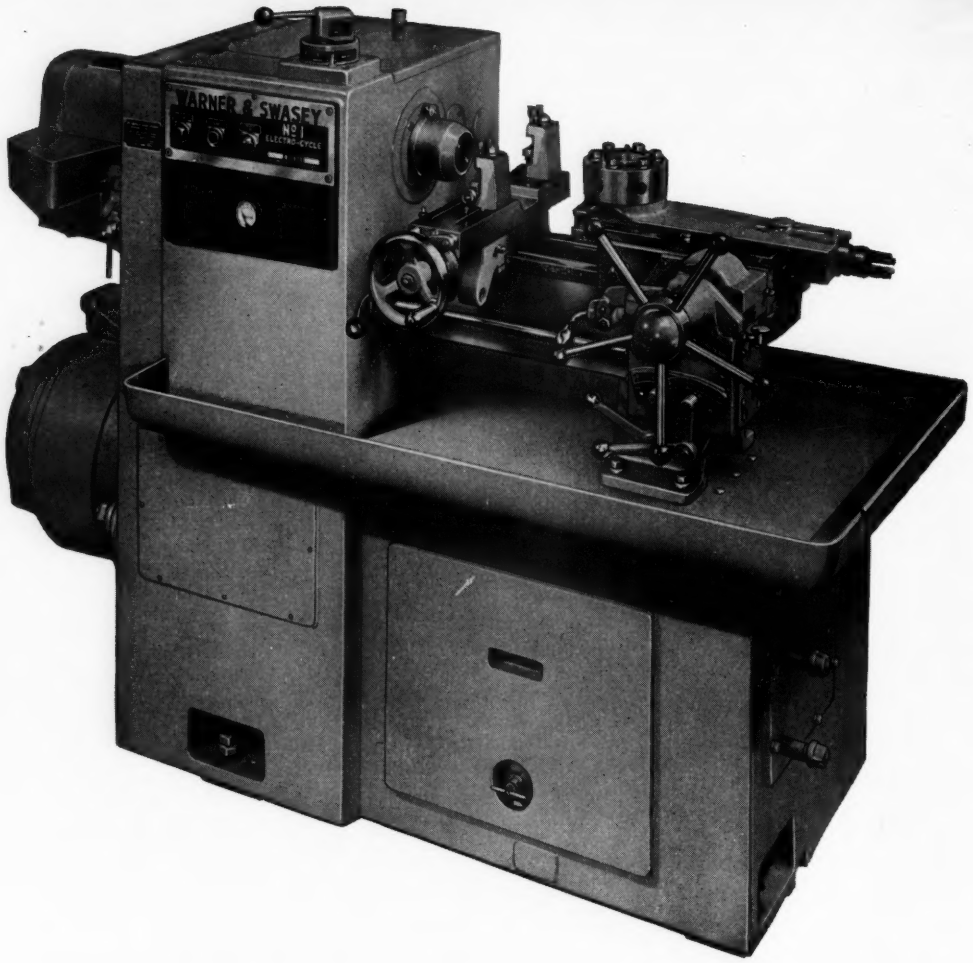
Difficult to define or measure, this unseen value is in fact the Plus Factor of Koppers Engineering Services that makes for customer satisfaction. You are invited to consult with our Engineers and Management.

For any kind of metallurgical construction
YOU CAN COUNT ON KOPPERS

KOPPERS *Engineering and Construction Division*

KOPPERS COMPANY, INC.
PITTSBURGH 19, PA.

New Freyn-Design Blast Furnace. Soaring 225 feet skyward, this furnace has a hearth diameter of 25 feet and a capacity of 1,100 net tons of iron per day.



New Warner & Swasey Turret Lathe wins fast acceptance!

SINCE its introduction in 1950, the Warner & Swasey No. 1 E-C has lived up to the reputation for accuracy and dependability already set by its "big brothers" in the Warner & Swasey line. But, let the users themselves tell you how this new ⅝" capacity machine is performing for them:

". . . a great deal more flexible than previous machines of its size."

". . . more rigid."

". . . power feed to turret a decided advantage."

". . . delighted with its accuracy and speed range."

". . . more efficient on stainless steel."

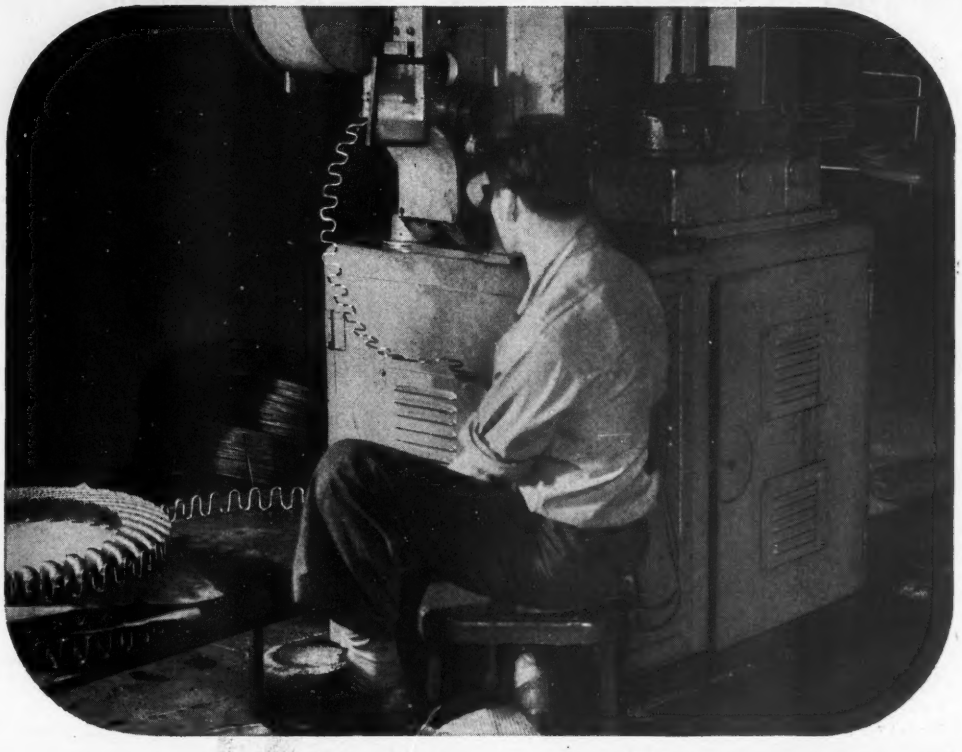
". . . better range of speeds for turning and threading."

And the reports continue to come in from all types of metalworking plants across the country. Such plants as Dumore Company of Racine, Allmetal Screw Products of New York City, Bahnson Company of Winston-Salem, Wisconsin Motor Corp. of Milwaukee, Kearfott Manufacturing of Newark and many others tell us the 1 E-C is out-performing any small capacity turret lathe they've ever had in their plants. You'll find it profitable to investigate the Warner & Swasey No. 1 E-C Turret Lathe, so have your Warner & Swasey Field Engineer show you how it can improve *your* small diameter bar operations.

WARNER & SWASEY
Cleveland

YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS, AND TAPPING MACHINES

SPRING WIRE



For uniform quality, we're sure this spring wire is the best we've ever made

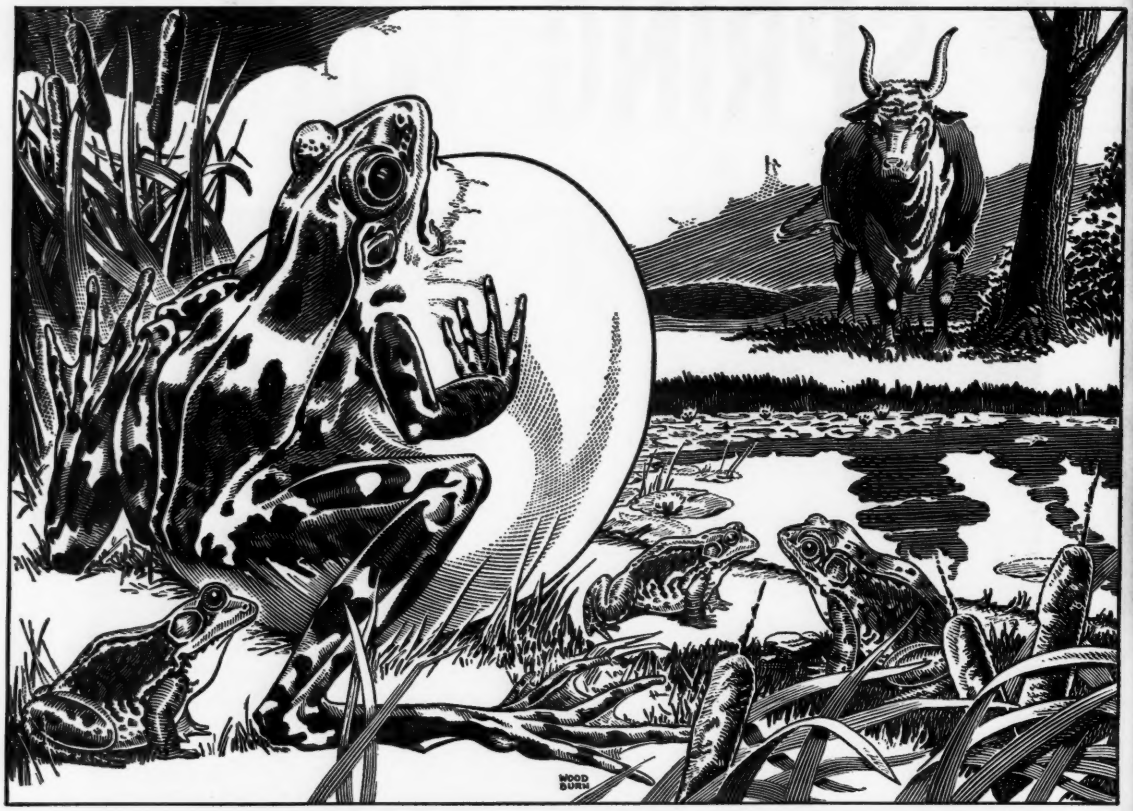
ROEBLING is about the largest specialty wire manufacturer in America. And with progressively improved facilities and more positive controls we are constantly turning out wires with a higher uniformity of gauge, finish and mechanical properties.

Among these products that save preparation time and boost production for users are mechanical spring wires including hard drawn, soft, annealed or oil-tempered M.B., H.B. and Extra H.B.; music wire; upholsterers' spring wire and valve spring wire...all in a full range of physical properties and finishes.

Reduce your machine shut-downs and step up overall production with the Roebling specialty wire that will meet your most exacting requirements. John A. Roebling's Sons Company, Trenton 2, N. J.

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 701 ST. CLAIR AVE, N. E. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.



"It's foolish to try to be bigger than you are"

REMEMBER Aesop's fable of the frog and the ox? Told 2,500 years ago, it goes:

"Three young frogs cried to their mother that a little brother had been trampled by the largest beast in the swamp. 'Oh, no,' said the mother, 'no beast is larger than I.' And she blew herself up to show how big she really was. 'But it was much bigger,' the little ones chorused. Whereupon the vain mother inflated herself until she burst." And the moral was, "It's foolish to try to be bigger than you are."

Aside from the wisdom of the fable for each of us individually, there is solemn warning for us as a nation. Some among us seem to believe that with an unlimited supply of taxpayers' dollars America can buy anything--ease and security at home, acceptance of our ideas abroad, friendship of other peoples, even world peace.

Like the vain frog, America inflates herself more and more dangerously, trying to stretch herself to be the biggest thing in the swamp. Meanwhile the enormous beast that is the world goes its own way, scarcely affected by the vainglorious display of America's inflation. It's the same old world that was indifferent before the pomp of Egypt, Persia, Greece and Rome.

How will our present "puffing" end? Isn't it obvious that continued inflation can bring disaster? Only by a realistic policy of living within our means--not trying to be bigger than we are--can America avoid the catastrophe of Aesop's foolish frog.

YOUR SCRAP V YOUNGSTOWN IS NEEDED

The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio
Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now. Turn in your scrap, through your regular sources, at the earliest possible moment.

Better Sight More Production with Landis Eye Level Wheel Feed

Grinding wheel feed at eye level gives these advantages

on Landis 10-14" Plain Grinder.

- Work and feed wheel visible at same time
- No tiresome bending or stooping
- Large easy-to-read graduations
- Sensitive and accurate grinding wheel feed

LANDIS

precision grinders

Want proof that Landis Plain Grinders can increase output? Send us blueprints of your work pieces for production estimates. Landis Tool Company, Waynesboro, Pa.

NIAGARA

SERIES B
GAP FRAME Double Crank Presses

Niagara B-4 x 72 Press at the General Machine Works in Los Angeles. It is shown here fitted with two dies for forming operations on an automatic deflector.

The same press as shown above arranged with dies for redrawing projectile parts in 5 steps. Shells are transferred manually from die to die.

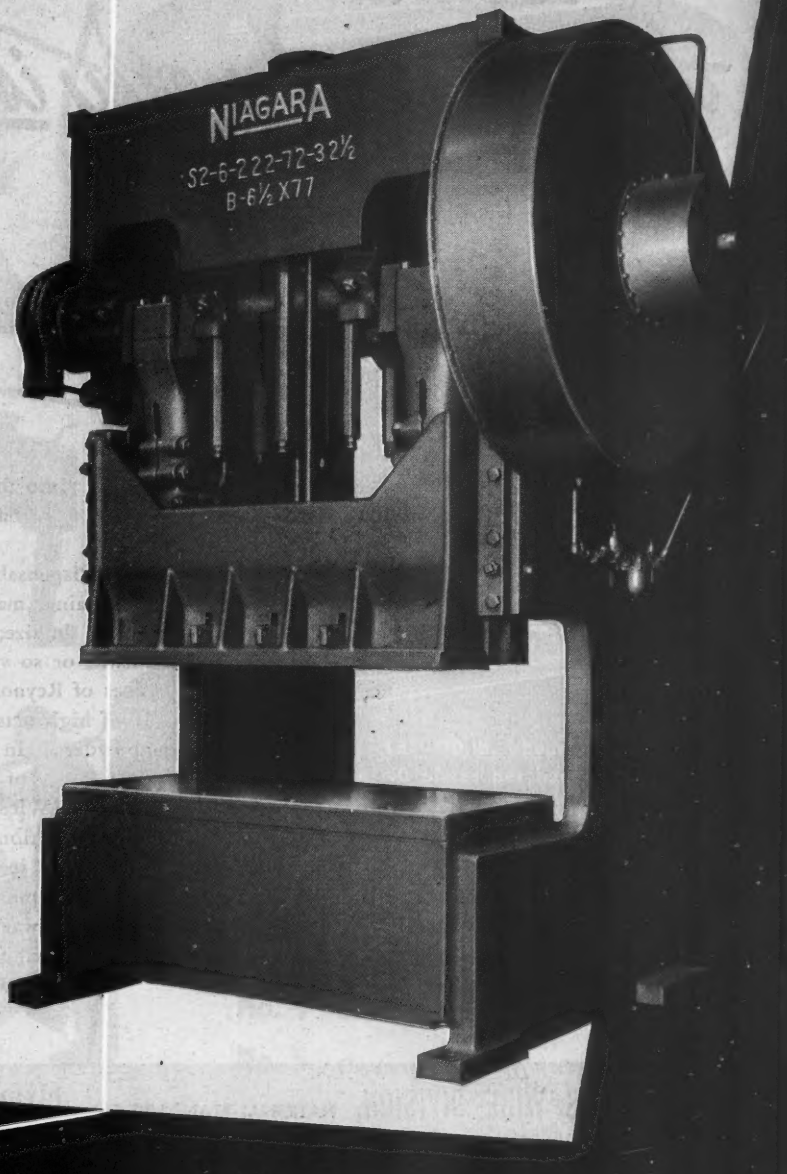
NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.

Manufacturers of a complete line of sheet metal working equipment ranging from small hand tools up to large power operated machinery.

Versatility and High Production

- Gap frame convenience with double crank width.
- Ideal for long progressive dies or multi-station dies.
- Rear of press open for full accessibility.
- One piece welded steel frame for maximum rigidity and long die life.
- Exclusive Niagara Sleeve Clutches for maximum productive strokes per minute and minimum maintenance cost.
- Niagara cushions for drawing operations.
- Automatic feeds for high production jobs.

Write for Bulletin



Niagara B-6½ x 77 Gap Frame Double Crank Press. Air actuated, electrically controlled sleeve clutch with friction clutch convenience and sleeve clutch economy. Air releasing brake. Clutch and gearing operating in a bath of oil. Air counterbalance for slide with surge tank over-size cylinder and pressure regulating valve to compensate for various weights of dies. Cross bar knockout in slide. V-belt motor drive.

DISTRICT OFFICES: NEW YORK • CLEVELAND • DETROIT • PHILADELPHIA

TODAY...

the quality of mercy is strained!

● Just a bottle . . . and a tube . . . with blood plasma flowing slowly into the veins of a wounded man on the battle field . . . to save that man from almost certain death. And on that indispensable life line . . . a tiny blood plasma strainer made of Reynolds Wire Cloth. Small in size; big in performance. Not quite so dramatic, or so vital, are the many other *for-defense* uses of Reynolds Wire Cloth—in the production of high octane aviation gasoline . . . in making gunpowder . . . in radar reflective tow targets . . . and, of course, the tremendous number of Reynolds Wire Cloth applications in Agriculture, in Aviation, and the Automotive Industry—so essential in sustaining the defense and civilian economies of our nation in peacetime or in wartime. Reynolds combines 50 years' wire-weaving experience with modern facilities. Consult Reynolds engineers. No obligation.

REYNOLDS WIRE

protects performance

REYNOLDS WIRE DIVISION, NATIONAL-STANDARD CO., **DIXON, ILLINOIS**

Divisions of National-Standard Co.

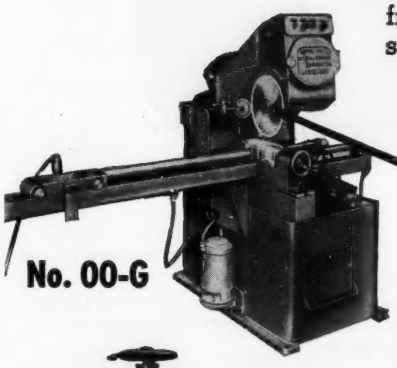
ATHERTON STEEL...Clifton, N. J. ..... Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD...Niles, Mich. ..... Tire Wire, Fabricated Braids and Tape
WARNER LITHO MACHINERY...Jersey City, N. J. ..... Metal Decorating Equipment
WORCESTER WIRE WORKS...Worcester, Mass. ..... Round and Shaped Steel Wire, Small Sizes

NS NATIONAL-STANDARD Company NILES, MICHIGAN

OUR TIME STUDIES WILL PROVE

"It's the Cost per Cut that Counts!"

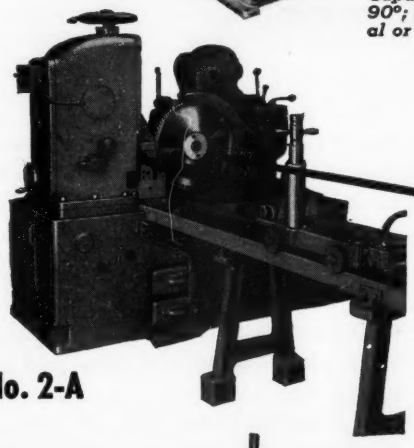
There's one economical way to cut off metal—by the Motch & Merryweather Triple-Chip Method. Speed, accuracy, square burrless ends, milled-finish pieces, — all contribute to profitable operation. Our wide experience in circular sawing covers all metals from magnesium to titanium. We are ready to demonstrate how the Triple-Chip Method will lower your costs.



No. 00-G

Material: S.A.E. 1020 tubing; 3" OD; .375 wall.
Production: 120 pieces per hour.
Tool Cost: $.0005 per piece.

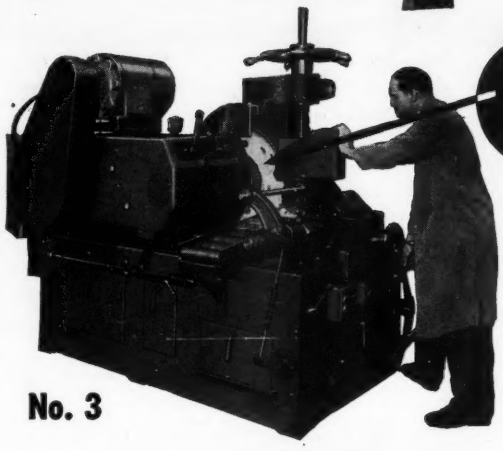
Capacity: up to 3" dia. at 90°; 2½" dia. at 45°. Manual or automatic stock feed.



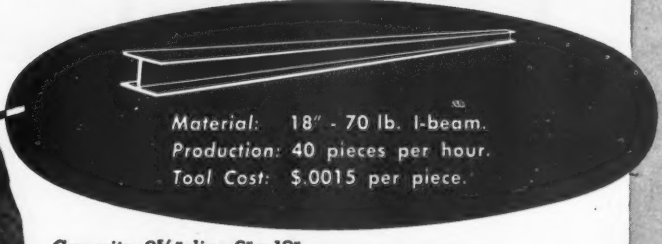
No. 2-A

Material: S.A.E. 1020, 5" dia.
Production: 60 pieces per hour.
Tool Cost: $.001 per piece.

Capacity: up to 6½" dia., 6" square. Manual or automatic stock feed.



No. 3



Material: 18" - 70 lb. I-beam.
Production: 40 pieces per hour.
Tool Cost: $.0015 per piece.

Capacity: 9⅝" dia., 6" x 18" rectangular shape. Manual or automatic stock feed.

Also 2 Still Larger Sizes:

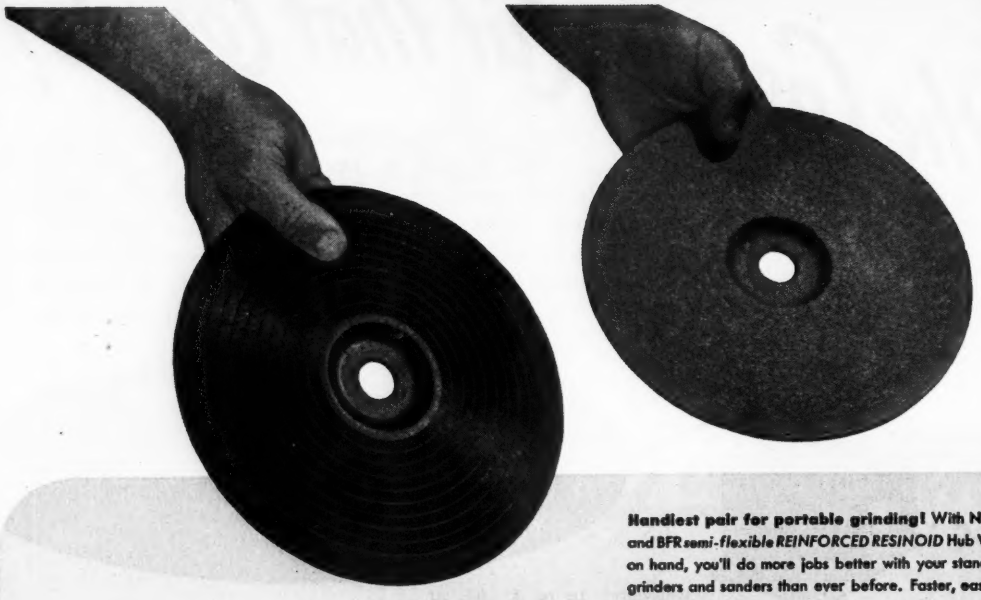
No. 4 *Capacity:* up to 16½" dia.

No. 5 *Capacity:* up to 43" dia.

Manufactured by — THE MOTCH & MERRYWEATHER MACHINERY CO —

CLEVELAND 13, OHIO

Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines



Handiest pair for portable grinding! With Norton BD *rigid* and BFR *semi-flexible REINFORCED RESINOID* Hub Wheels always on hand, you'll do more jobs better with your standard portable grinders and sanders than ever before. Faster, easier and safer, too! Try them and see.

These 2 Multi-Job NORTON *reinforced* hub wheels

grind faster... easier...and can't fly apart!

Lighter and easier to handle than cup wheels! Longer lasting than coated abrasive discs. More versatile than either! That's the handiest pair in portable grinding . . . the time-tested Norton BD rigid hub wheel and the sensational new Norton BFR semi-flexible hub wheel.

What a difference they'll make in your shop. For grinding jobs where finish is more important than stock removal — and especially for blending corners and contours — the new BFR semi-flexible hub wheel is your best bet. For more severe work where stock removal is important, your vote goes to the BD wheel. Check the chart at the right.

Both cut fast . . . thanks to their sharp, durable aluminum oxide abrasive and special resinoid bond.

Both are nylon-web-reinforced, for extra safety. They hold together even if accidentally cracked until the machine can be stopped and the wheel changed.

Ask your nearby Norton Distributor to demonstrate these versatile Norton *Reinforced* Hub Wheels to you. He's listed under "Grinding Wheels" in your classified telephone directory. Or write for new Bulletin 225. NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities. EXPORT: Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

What versatility!

Just a few of the jobs you can do with the handiest, safest pair for portable grinding. Where both types of wheels are indicated choice is dependent on the nature of the job.

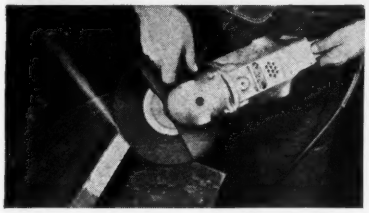
THE JOB	BD RIGID	BFR* SEMI-FLEXIBLE
Removing rust and scale, scarfing and beveling before welding	A24-O14BD	A24-K BFR
Cutting away, smoothing and blending welds on fabricated work	A36-O14BD	A24-K BFR
Making V cut to remove old weld materials for salvaging steel parts	A24-R14BD	
Removing burrs and sharp edges from steel sheets and plates	A36-R14BD	A24-K BFR
Roughing off excess weld material before smoothing with coated abrasive discs	A24-O14BD	A24-K BFR
Cutting off gates and risers on brass, bronze and aluminum castings		A24-K BFR
Notching large gates and risers on all kinds of castings	A24-R14BD	A24-K BFR
Cleaning between teeth of large marine and industrial gears	A36-O14BD	
Removing mold marks and smoothing castings before painting		A24-K BFR
Smoothing flame-cut edges on heavy steel sheets and plates	A24-R14BD	
Smoothing stainless steel welds	A24-O14BD	A24-K BFR
Smoothing and blending copper, bronze, aluminum and stainless steel surfaces	A24-O14BD	A24-K BFR

*A24-K BFR is considered a good all around specification but for jobs where finish is not important 16 grit will give somewhat longer wheel life.

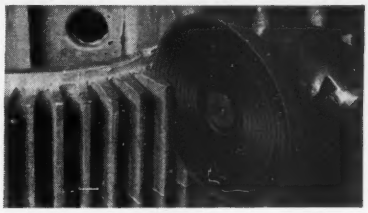
1. **Cutting down a heavy weld** is quick and easy for you with a Norton BD rigid wheel.

2. **Blending in a welded corner** is a job you can do faster and better with a Norton BFR semi-flexible wheel.

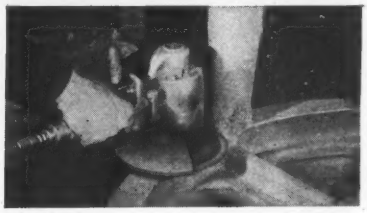
3. **Smoothing out a welded radius** also calls for a work-hugging BFR semi-flexible wheel.



4. **Smoothing a flame-cut edge** comes naturally to an extra-strong, extra-safe BD rigid wheel.



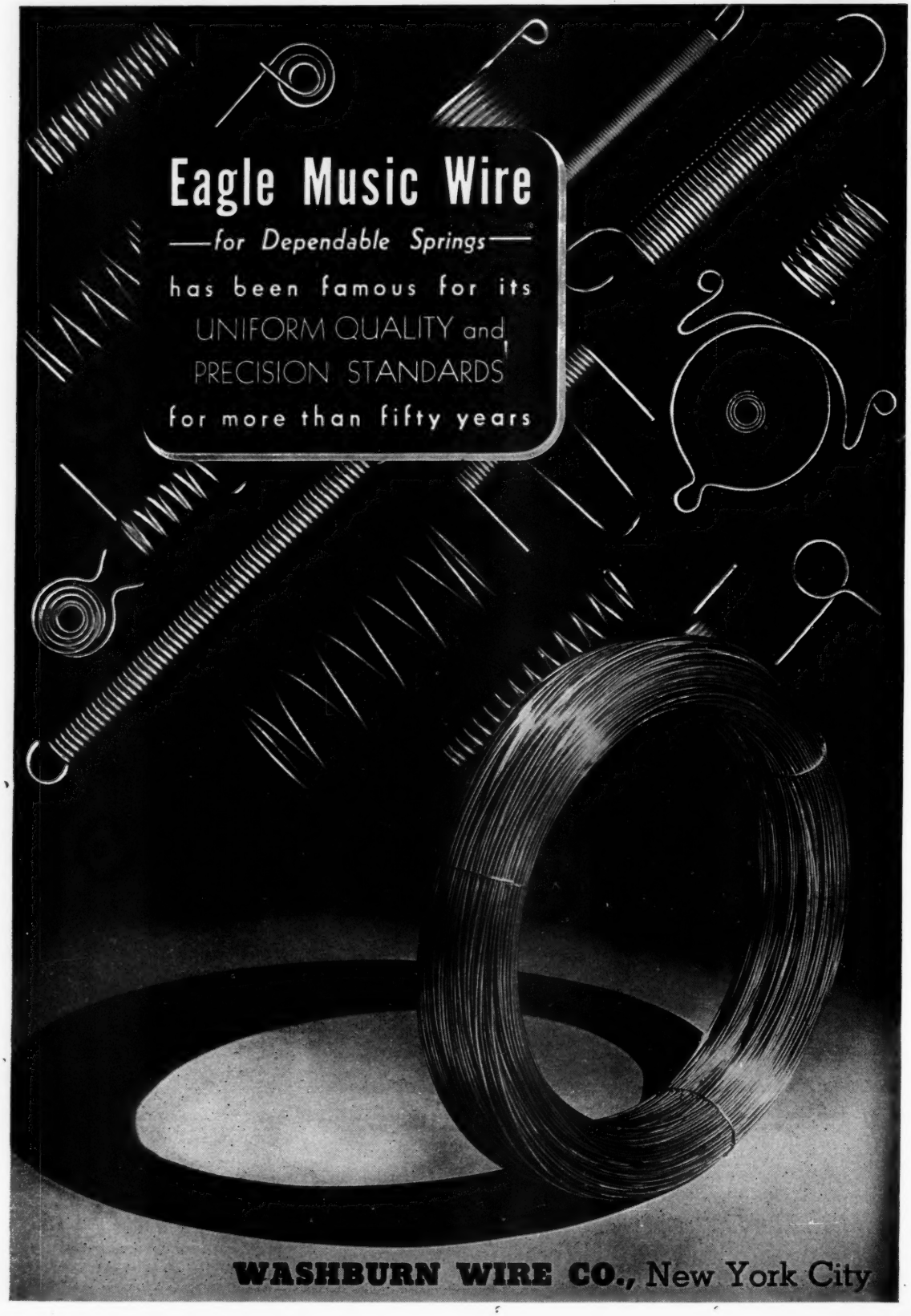
5. **Cleaning out fins** of a compressor casting is a tough job made easy by a BD rigid wheel.



6. **Notching risers on gray iron castings** is an easy job for either the BD or BFR wheel. Take your choice.

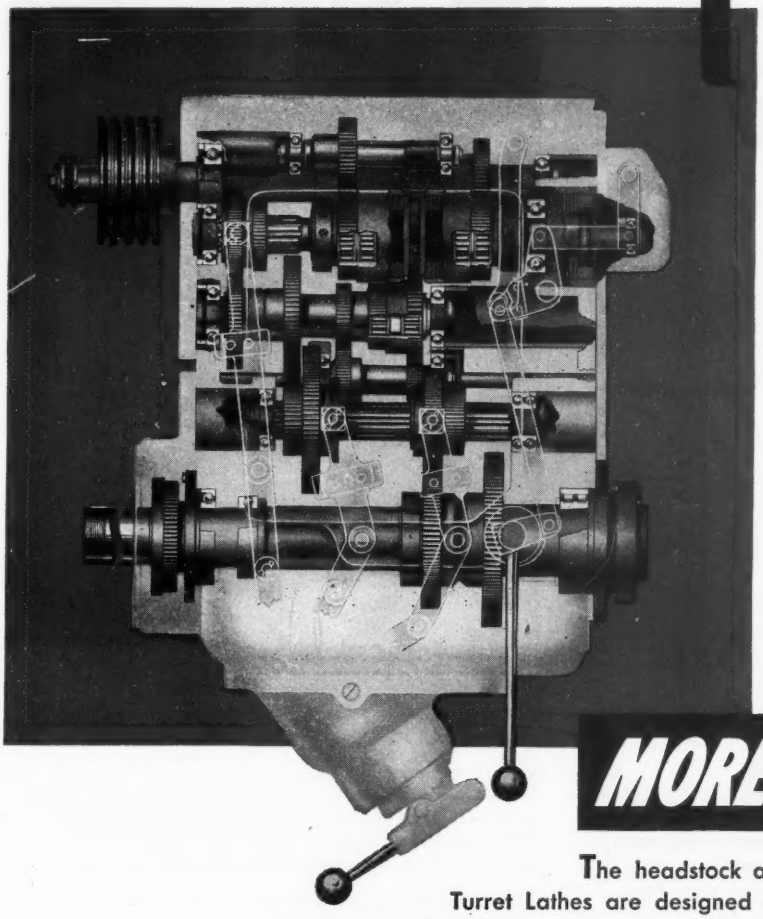
Making better products to make other products better

NORTON ABRASIVES


Eagle Music Wire
—for Dependable Springs—
has been famous for its
UNIFORM QUALITY and
PRECISION STANDARDS
for more than fifty years
WASHBURN WIRE CO., New York City

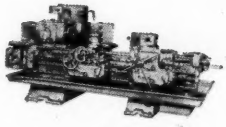
another reason why J&L turret lathes produce

MORE CHIPS PER TOOL
MORE PIECES PER HOUR
MORE PROFIT PER JOB



MORE POWER TRANSMISSION!

The headstock and transmission of all J & L Turret Lathes are designed and built for silent, smooth power transmission under the most exacting conditions. Anti-friction bearings are used throughout. The front spindle bearing is preloaded to take much heavier loads than will be encountered in actual service. Heavy cuts can be taken at high or low spindle speeds — or light, accurate finishing cuts can be taken at high spindle speeds, without readjustment. All gears are alloy steel, precision finished.



P.S. *You get all the horsepower you need when you want it. Write to Dept. 710 for Catalog.*

"World's most accurate and powerful turret lathes"

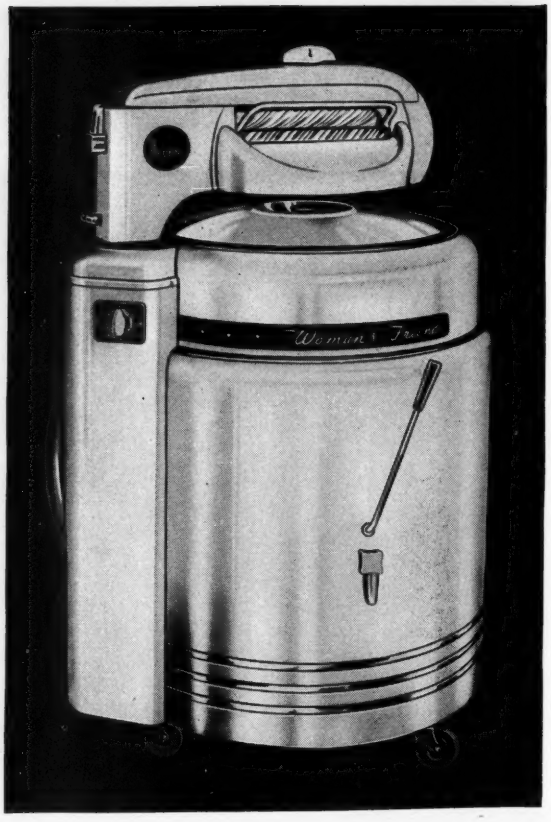
RAM TYPES: Bar, 1½" to 4½", Chuck, 10" to 12". SADDLE TYPES: Bar, 2½" to 5", Chuck, 12" to 18".

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., Springfield, Vt., U.S.A. TURRET LATHE DIV.

Photo courtesy Central Rubber and Steel Corporation, Findlay, Ohio.



New Washer Gets

LASTING ENAMEL ADHERENCE

The new "Woman's Friend" washer will keep its "showroom shine" through many and many a washday. Tub lid, wringer head, shroud, post shroud, and skirt all are formed from Republic Electro Paintlok and finished with a baked-on synthetic enamel.

Electro Paintlok is Republic's own zinc-coated sheet steel that's chemically-treated to *take* paints, lacquers and synthetic enamels readily and smoothly . . . and to *hold* them all equally well.

Its tight zinc coating stays tight and unbroken during all normal fabrication. It acts as an effective die lubricant too, giving you more production between grinds. And, it protects the finished product against underfilm corrosion where painted surfaces might become scratched or broken in use.

Electro Paintlok comes to you ready for painting. It usually requires only one simple cleaning to remove dirt acquired during storage and fabrication. Degreasing is necessary, however, when a drawing compound is used, or when grease or oil is present from other sources. Its full story is colorfully detailed in Republic booklet 525. Write for your free copy, today.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Dept.: Chrysler Building, New York 17, New York

Republic
REPUBLIC STEEL
ELECTRO ZINC PLATED SHEETS
Electro Paintlok · Electro Zincbond

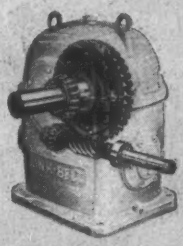
Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

Ask yourself these speed reduction questions . . .

1 Do I want high-ratio reduction with right-angle takeoff?

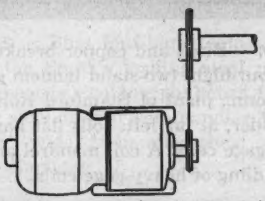
Drawing shows motorized P.I.V. variable speed and worm gear drives direct-coupled.

Then your answer is a LINK-BELT Worm Gear Drive



Reduction ratios: 3.1:1 to 8000:1
Torque: 1,400 to 123,000 in. lbs.
Output shaft rpm: 0.22 to 564

2 Is space at a premium?

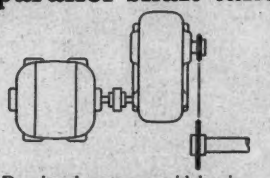


Drawing shows gearmotor with roller chain drive.

Then your answer is a LINK-BELT Gearmotor

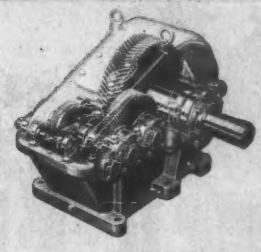
Reduction ratios: 6.2:1 to 292:1
Hp range: 1 to 30
Output shaft rpm: 6 to 280

3 Will I need high hp capacity with parallel shaft takeoff?



Drawing shows motor with herringbone gear and roller chain drives

Then your answer is a LINK-BELT Herringbone Gear Drive



Reduction ratios: 2.84:1 to 318:1
Hp range: ½ to 1000
Output shaft rpm: 2 to 600

Yes, LINK-BELT builds all 3

WHATEVER factor governs your speed reducer selection—ratio, space, shaft position, shock loading—you can get the exact answer to your needs from Link-Belt's complete line of enclosed gear drives.

For Link-Belt builds a full range of sizes and ratios in all three types—Helical, Herringbone and Worm. When a Link-Belt power transmission engineer analyzes your conditions, he can recommend the specific drive to meet your specialized requirements.

For complete information, call the Link-Belt office near you.

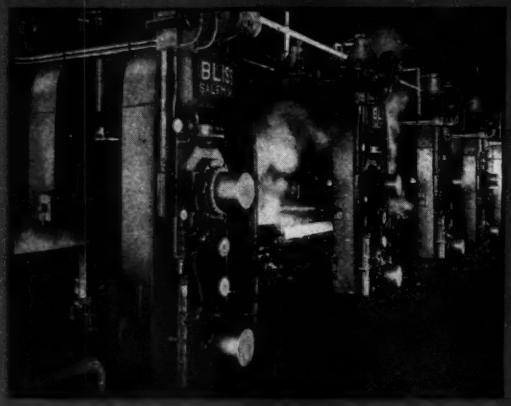
LINK-BELT

ENCLOSED GEAR DRIVES

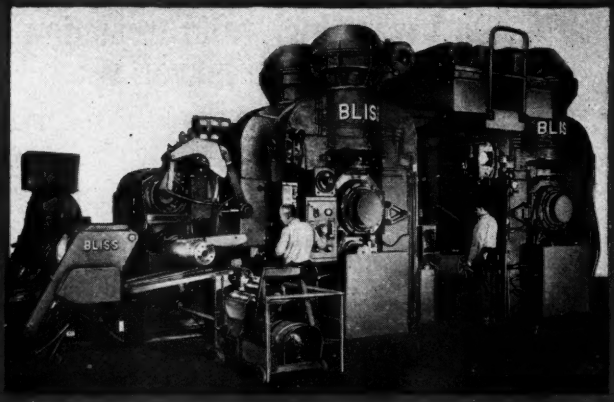
LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12,089

Whatever your metal-rolling job...

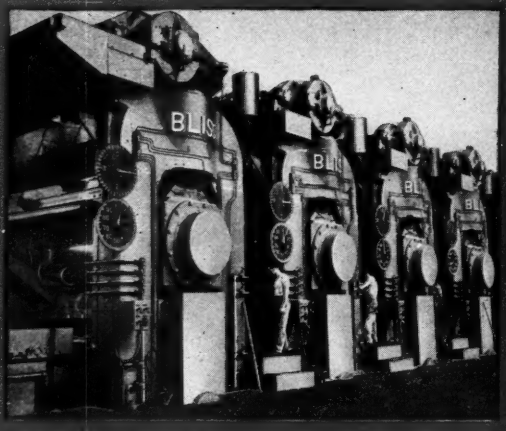
Hot..... Cold..... STEEL..... BRASS..... ALUMINUM.....



HOT-ROLLING STAINLESS · A Bliss 24″, five-stand hot finishing train handles all the hot-rolling of stainless and "specialty" steels at Superior Steel Corporation. Since the thin stainless is slit into narrow strips, extreme accuracy and flatness are vital.



BRASS TANDEM · Brass and copper breakdown is the job of this Bliss four-high, two-stand tandem strip mill at the Springdale, Conn., plant of Stamford Rolling Mills Company. Bliss coiler, at far left, coils flat bars. Tension reel winds lighter-gage coils. A coil mandrel and elevator permit quick handling of heavy-gage coils.



HOT-ROLLING ALUMINUM · This five-stand, four-high 80″ tandem mill hot-rolls aluminum sheet strip. Engineered and supplied complete by Bliss for a leading aluminum producer, this mill includes all necessary special auxiliaries such as roll brushers, guides and up coilers.

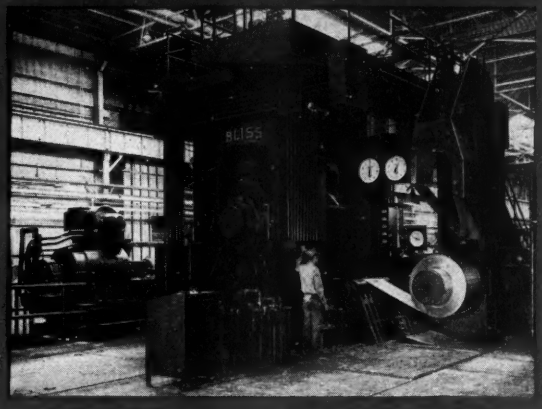
UP-CUT SHEAR LINE · Coiled steel is converted into uniformly flat sheet blanks at speeds up to 240 fpm by this shear line, designed by Bliss for Alan Wood Steel Company's 30″ hot mill. The Bliss continuous shear line performs nine operations—from feeding to piling. It is suited for use in steel, brass and copper mills or fabricating plants.

Remember:

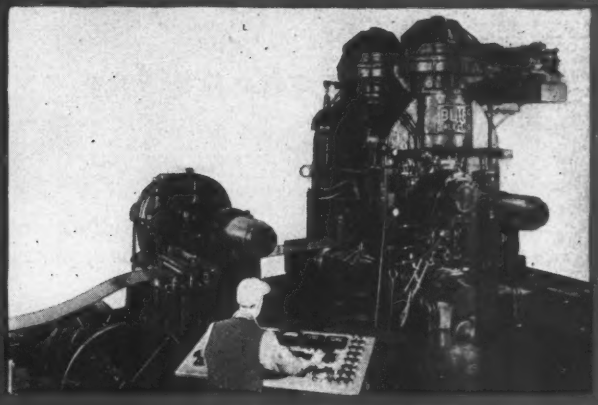
for Presses, ROLLING MILLS...

there's a BLISS mill to do it

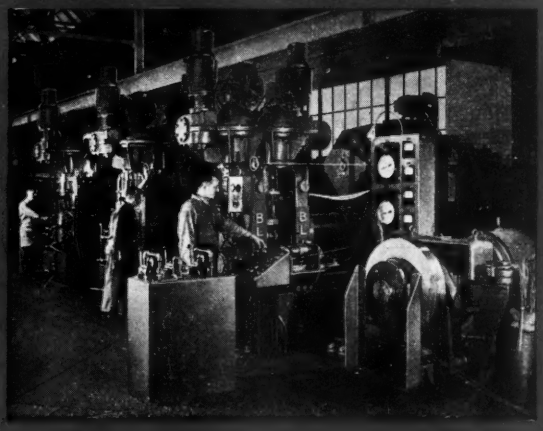
.....Breakdown.....Rundown.....Finishing.....



STEEL TEMPER PASS · Bliss four-high temper-pass mill, installed at the South's leading steel plant, rolled a record tonnage of steel in eight hours. Here, it tempers 20-gage steel at 3500 fpm; handles 30- to 13-gage, 20″ to 48″ wide. It handles sheet stock coils up to 72″ in diameter



FOUR-HIGH REVERSING · This four-high reversing cold reduction mill, specially designed by Bliss, proved to be the answer to the Greer Steel Company's "varied" requirements—a rugged, versatile mill to maintain exacting standards for quality of finish and accuracy of gage on short runs and quick changeovers.



COLD-ROLLING STAINLESS · The steel plant for whom Bliss built this three-stand, two-high mill reports a 50% average reduction in a single pass; accurate cold-rolling and finishing of stainless and special alloys within .0005″ overall; 'round-the-clock operation at speeds up to 600 fpm.

For many, many years, the world's major metal-producing plants have specified Bliss rolling mills. Built for precision work at maximum speeds, Bliss mills take the abuse of continuous, high-speed operation with least possible maintenance.

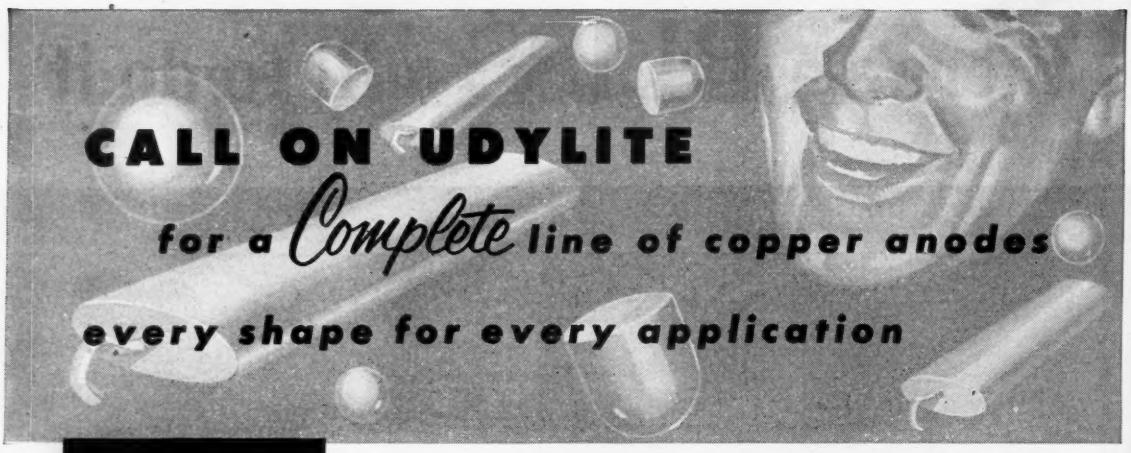
Bliss builds a complete line of rolling mills and accessories for hot or cold rolling of ferrous or non-ferrous metals. Whatever your metal-rolling problem, you can look to Bliss for the right answer. Take the first step by writing for the Bliss 52-page brochure, including an extensive range of rolling mill machinery and many useful pages of engineering tables.

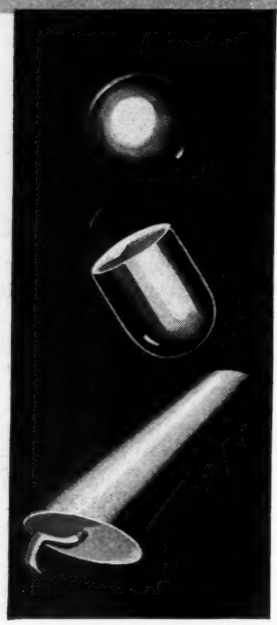
E. W BLISS COMPANY
General Office: Canton, Ohio
ROLLING MILL DIVISION: SALEM, OHIO

Branch offices in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. West Coast Representatives: Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Co., Seattle. Other dealers in United States cities and throughout the world.

and Special Machinery.....

IT'S BLISS





Udylite copper anodes are available in every shape for every type of plating operation.

BALL ANODES
The most efficient shape. No other anode presents as much surface per pound weight. Can be used with Udylite Ball Holder or Anode Basket for complete usage without waste.

OPEN MOULD ANODES ("UNODES")
Economical. The open-top moulds that "unodes" are cast in provide faster production, less handling cost so the open mould anodes can sell at a lower price.

OVAL ANODES
One of the most common anode shapes used in the plating industry. Ideal for the big jobs where big anodes are needed.

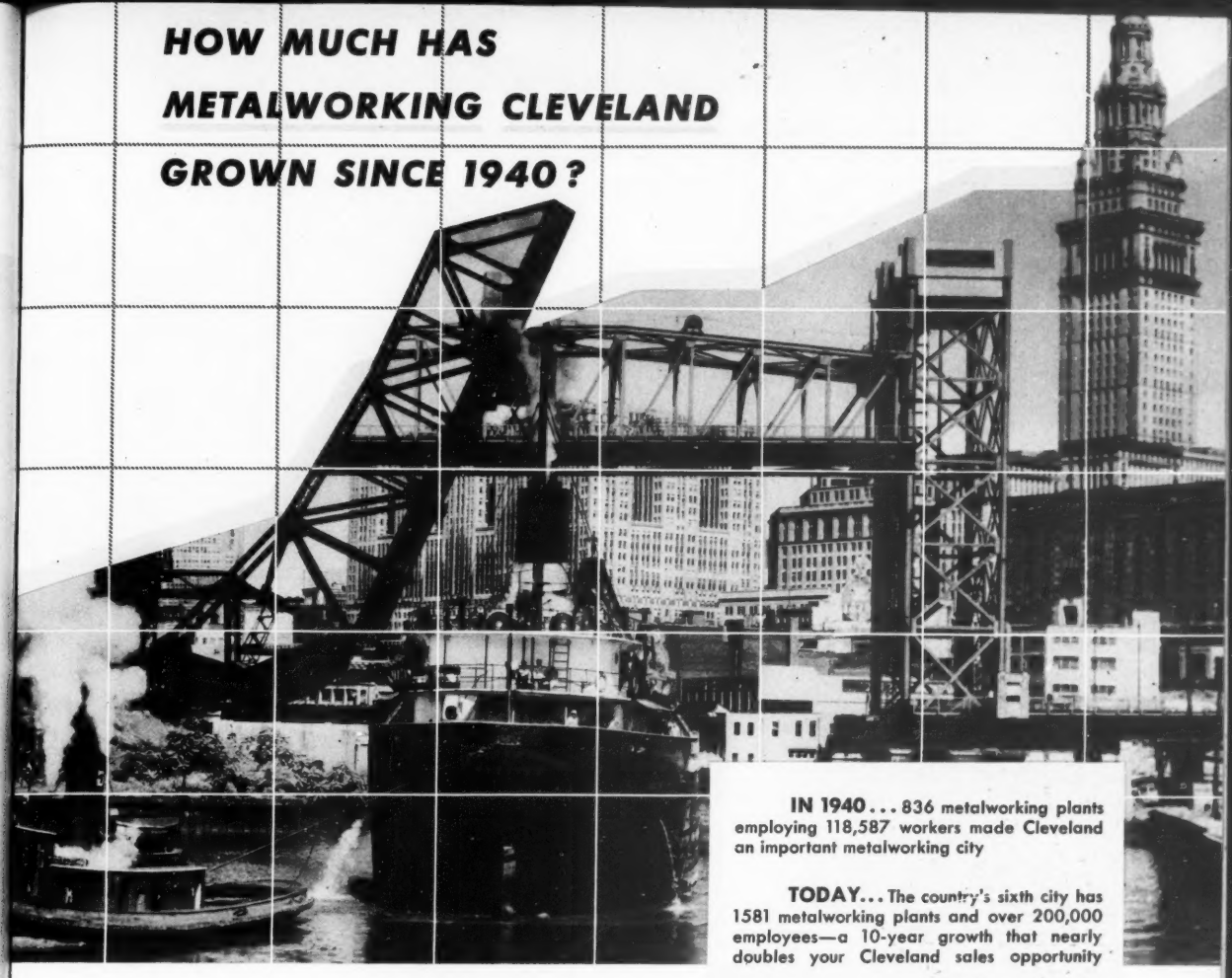
ELECTRO-DEPOSITED ANODES
These anodes are produced by electrolytic process. They have a rough surface for rapid depositing and are highly recommended for industrial purposes.

All Udylite Copper Anodes are made of the finest, purest form of electrolytic copper. You get *all* metal when you buy Udylite Anodes. You don't pay for dross or impurities. Your Udylite Technical Man can give you complete information about Udylite Copper Anodes in all sizes and shapes for every need. And ask him about the rest of the *complete* Udylite plating supply line—from anode hooks to zinc salts. Or write direct to The Udylite Corporation, Detroit 11, Michigan. *There's no obligation.*

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

PIONEER OF A BETTER WAY IN PLATING

HOW MUCH HAS METALWORKING CLEVELAND GROWN SINCE 1940?



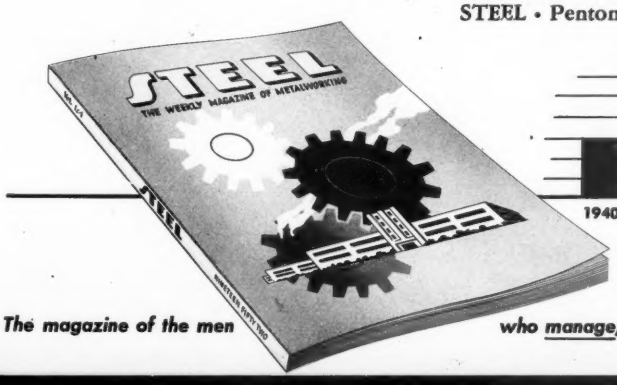
IN 1940... 836 metalworking plants employing 118,587 workers made Cleveland an important metalworking city

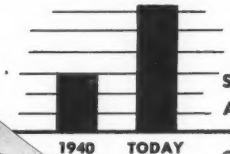
TODAY... The country's sixth city has 1581 metalworking plants and over 200,000 employees—a 10-year growth that nearly doubles your Cleveland sales opportunity

The same thing has happened to your whole Metalworking market!

Having more than doubled in number of plants, employment and physical volume since 1940, the metalworking industry offers rapidly expanding sales opportunities for companies like yours with a stake in this biggest of all markets. But your share of the increased potential depends on how well you keep ahead of your competition through an effective sales and advertising program. STEEL makes it possible for you to reach more of the key men who run U. S. Metalworking than any other publication in the field. By continuing to match its circulation to buying power, STEEL carries your advertising to the plants that account for well over 90% of all metalworking business. Ask the man from STEEL for the latest facts on STEEL's coverage of this dynamic industry.

STEEL • Penton Building • Cleveland 13, Ohio





STEEL Keeps Growing As Metalworking Grows

Closely matching the growth of Metalworking, STEEL has more than doubled its circulation since 1940!

The magazine of the men who manage, operate and buy for the Metalworking industry

How to make friends

of your customers' plant engineers....

good judgment calls for
PARKER-KALON®
when good design calls for
SOCKET SCREWS

The opinion of your customers' plant engineers and maintenance crews carries a lot of weight when the time comes to order additional equipment.

You can make friends for your product by assembling it with P-K Size-marked Socket Head Cap Screws. Each screw has the size clearly incised on the head. It's easy to tell which screw goes where.

Saves you time in product assembly, too. Sizes are issued correctly, used correctly. There's no time lost checking and changing, no spoiled work. It puts screws back in use that might otherwise be wasted because sorting is "too much bother".

Since there are no better quality Socket Screws available at any price, why not give your product the plus of the exclusive P-K Size-marked Gear Grip features? Ask for samples. Parker-Kalon Corporation, 200 Varick Street, New York 14.

DELIVERIES ARE BETTER CHECK WITH P-K FIRST

Your P-K DISTRIBUTOR *has good news. His stocks of P-K Screws are steadily improving. The size and type you need may now be readily available. Ask him about it. Remember— "If it's P-K . . . it's O.K."*

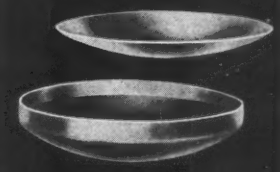
SIZE-MARKED SOCKET HEAD CAP SCREWS • GROUND THREAD SOCKET SET SCREWS • FLAT HEAD SOCKET CAP SCREWS • STRIPPER BOLTS • PIPE PLUGS • HEX KEYS

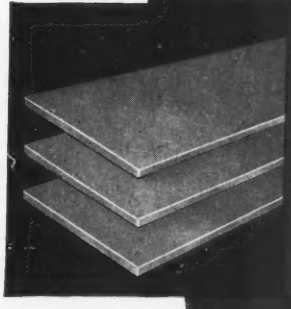
they're our specialties and we give them extra special care

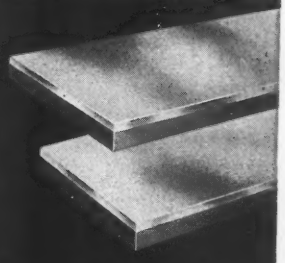
If your requirements call for any of the products shown here, you'll find it to your advantage to get in touch with us.

Each of these products is a specialty with us, which means that every order, large or small, receives our careful, individualized supervision—painstaking attention in every processing detail from start to finish.

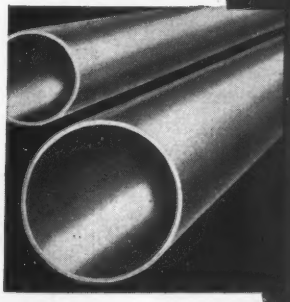
We would welcome an opportunity to show you how our specialized facilities can supply you with steel and steel products that are tailored to meet your most exacting specifications. For additional information write to Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Del.







STAINL
STEEL



THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
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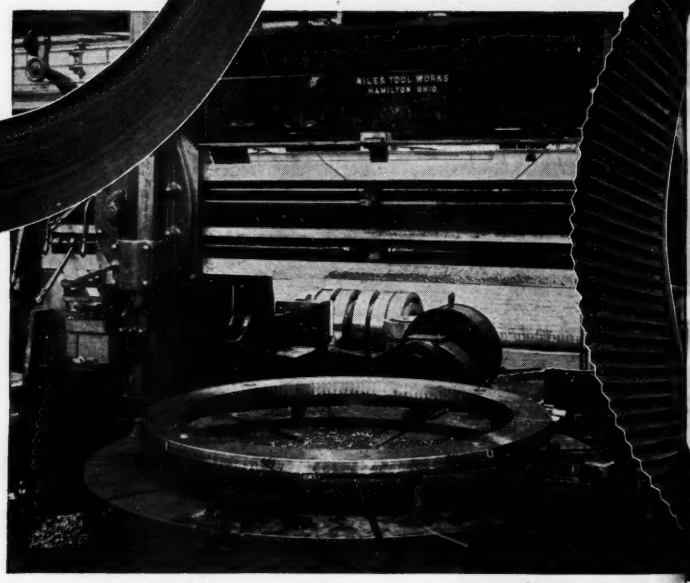
CLAYMONT STEEL PRODUCTS
PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE STANDARD S

GIVES T

NOTICE: DESIGN AND PURCHASING DEPARTMENTS

Standard's three-unit mills—each composed of a horizontal mill and two steam hammers for preliminary operations—can roll practically all sizes of rings up to a maximum of 12-feet outside diameter. Let us quote on your requirements.



Finish-machining the ring gear on a Niles vertical boring mill. Teeth have already been cut.

Standard Weldless Ring Blank, rolled to close tolerances for conversion to a table rack spiral bevel ring gear for a boring mill.

STANDARDIZE ON STANDARD FOR

WHEEL MILL PRODUCTS,

STEEL CASTINGS,

WELDLESS RINGS,

FORGINGS,

FLANGES,

BALDWIN BLH LIMA-HAMILTON

BALDWIN -

D STEEL WORKS ROLLED GEAR BLANK

S THIS RING GEAR

a better start in life

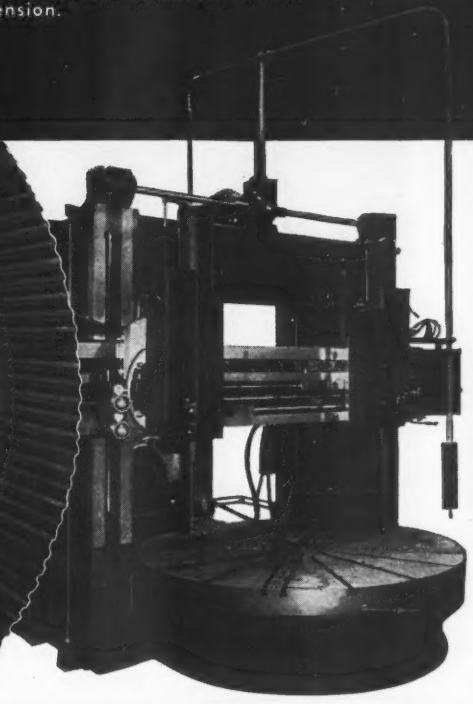
The finished ring gear. Uniform metal structure assures high precision in gear tooth form and dimension.

The job of the table-rack spiral bevel ring gear on a modern boring mill is rough, rugged and responsible—and the only way to get the essential physical properties *in the gear* is to have them *in the blank.* Strength—to take the stress and strain of high-speed production with deep-cutting carbide tools. Uniform structure—to permit the precision machining that is the basis of precision operation. Accuracy in dimension—to save machining time and waste.

Standard Steel Works blanks meet every requirement. Starting with steel produced in Standard's own open-hearth furnaces, the rings are rolled to close tolerances to develop every desirable property inherent in the metal . . . heat treated to further improve service characteristics. If you have a ring-gear problem, Standard blanks may provide the solution you are looking for. You'll find Standard an ideal supplier—big enough to handle the most demanding jobs . . . small enough to make every job a matter of direct personal concern.

STANDARD STEEL WORKS DIVISION
Burnham, Mifflin Township, Pennsylvania

BALDWIN-LIMA-HAMILTON CORPORATION
Philadelphia 42, Pa. • *Offices in Principal Cities*



Niles 10-foot hydraulic feed vertical boring mill; table is driven by the gear shown. This is a high-production machine, for use with carbide tools—which calls for high strength in the drive gear.

-LIMA-HAMILTON

For this PRODUCT

COLD DRAWN SEAMLESS STEEL TUBING

In these USES

MECHANICAL, PRESSURE, AIRCRAFT and DIESEL TUBING

In this RANGE

SIZES up to 1½" OUTSIDE DIA.

Specify SUMMERILL, and be sure!

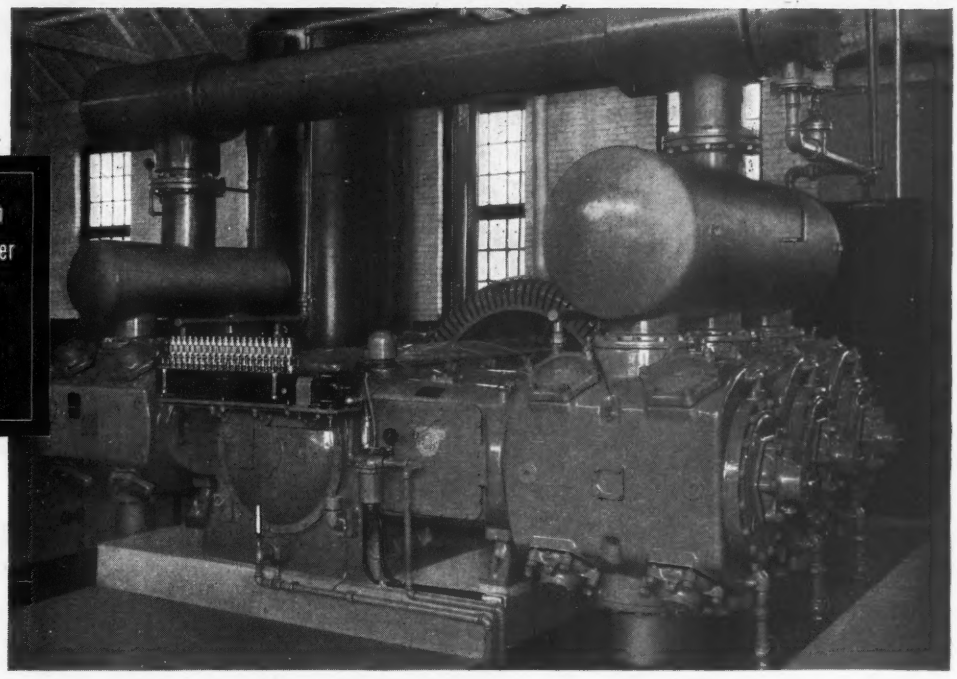
For a great many years, specifying "Summerill" on orders for cold drawn seamless steel tubing has been a very sure way of getting completely dependable quality. It's more true today than ever, because we have the modern facilities and control equipment of a new plant to reinforce our traditional standards. ● *Let us supply you with footage produced to meet your demand for high quality tubing. Mechanical and aircraft tubing size ranges can be supplied on earlier deliveries than our other product lines.*

Summerill TUBING COMPANY DIVISION
COLUMBIA STEEL & SHAFTING COMPANY
Pittsburgh 30, Pennsylvania

W&D 4184

SPECIALIZING IN COLD DRAWN SEAMLESS STEEL TUBING

Over 6 million Cooper-Bessemer Compressor Horsepower NOW IN USE!



Recently installed in Newark Stove Company plant, Newark, Ohio, this is a Cooper-Bessemer 800 hp Type FM compressor with 5 balanced-opposed compressor cylinders.

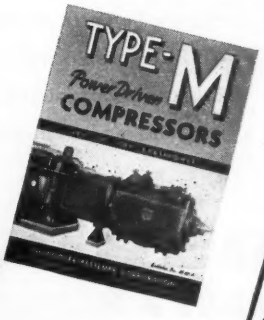
Why Air Costs Less at Newark Stove

Add up the advantages of this modern-type Cooper-Bessemer compressor, and you'll see why it does a *low*-cost job, year in, year out.

For example, with balanced, opposed action, it's the smoothest running compressor money can buy . . . and that means continuous, vibration-free operation with less repair, less maintenance.

For another thing, Cooper-Bessemer design offers unusual compactness. Foundation and piping requirements are correspondingly less. No need for a deep motor pit.

But check up further. Look into the many construction features, found only in Cooper-Bessemers, that are your *best* guarantee of permanent satisfaction.



SEND FOR THIS BULLETIN . . . it gives details and pertinent data on the Cooper-Bessemer power-driven Type M compressors, 350 to 1,000 bhp.

The Cooper-Bessemer Corporation

MOUNT VERNON, OHIO — GROVE CITY, PENNA.

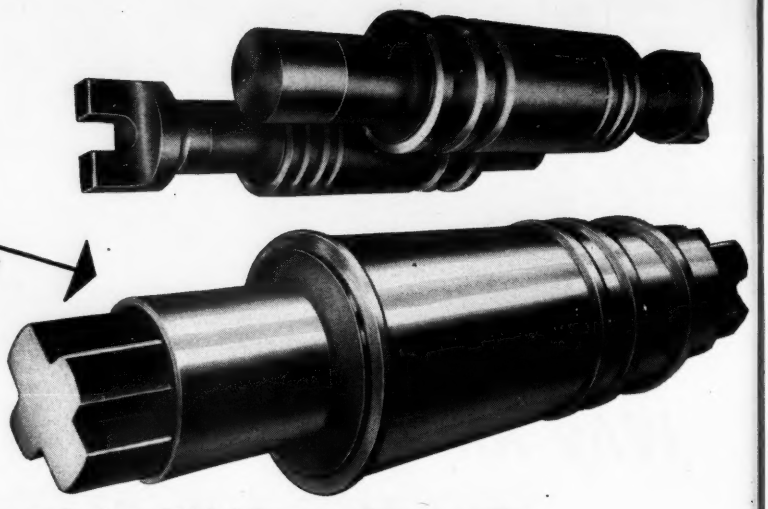
New York Washington, D. C. Bradford, Pa. San Francisco Houston, Dallas, Greggton, Pampa and Odessa, Texas Seattle Tulsa Shreveport St. Louis Los Angeles Chicago Caracas, Venezuela Cooper-Bessemer of Canada, Ltd., Halifax, Nova Scotia Gloucester, Mass. New Orleans, La.

IN SALT DISPENSERS

standard models fill the bill

IN MILL ROLLS

it takes a different kind of engineering



To get volume production and high dollar returns from your rolling equipment, you know that a lot depends upon the design and engineering of your rolls. In short, it takes a different kind of roll engineering to meet your own requirements. It calls for specialized design, manufacturing control, and skilled installation of the rolls to give you the kind of results you want.

BIRDSBORO ENGINEERING SERVICE

If your rolling operations are falling short of established goals, or production costs are biting the heart out of your profits, you may find the help you're seeking with Birdsboro Engineering Service. There's no obligation to have a Birdsboro Representative give you complete information on what this service can accomplish in your plant.

BIRDSBORO

STEEL FOUNDRY & MACHINE CO.

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Offering Complete Engineering and Construction Service on:

Steel Mill Machinery • Crushing Machinery • Rolls
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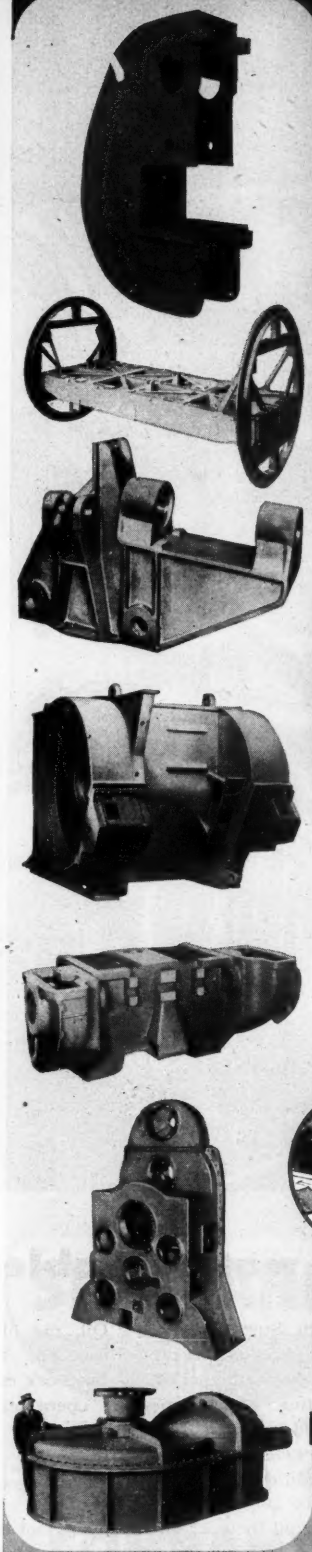

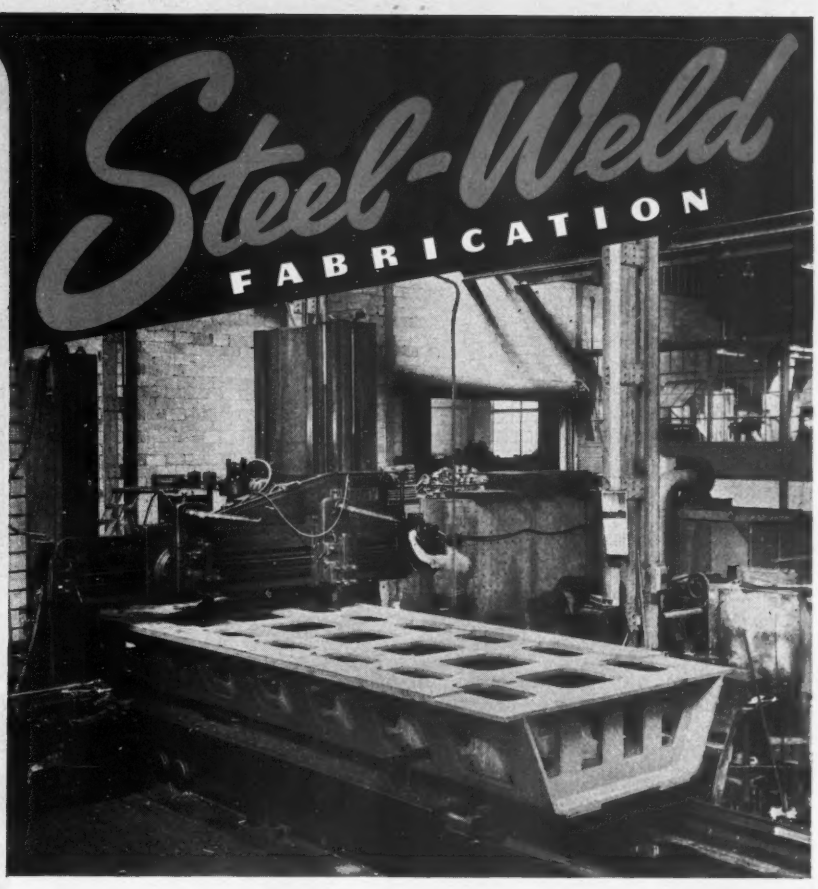

Use WELDED STEEL for Greater Strength with Less Weight!

The twenty-ton weldment above is one of many heavy fixture parts produced by Mahon for the defense production program. It, and the Steel-Weld Fabricated parts and assemblies illustrated at the left, are typical of thousands of units Steel-Weld fabricated and machined by the Mahon Company for manufacturers throughout the country. Do you have parts or assemblies in your product that could be redesigned for more economical production in welded steel? . . . do you have products in the development stage in which Steel-Weld fabricated parts could reduce weight without sacrificing strength? . . . are you faced with limited production on an item involving heavy pieces in which pattern costs are a consideration? If so, it will pay you to familiarize yourself with Mahon facilities and technical services . . . you will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearing job, embodying every advantage of Steel-Weld Fabrication.

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

SUPERLA

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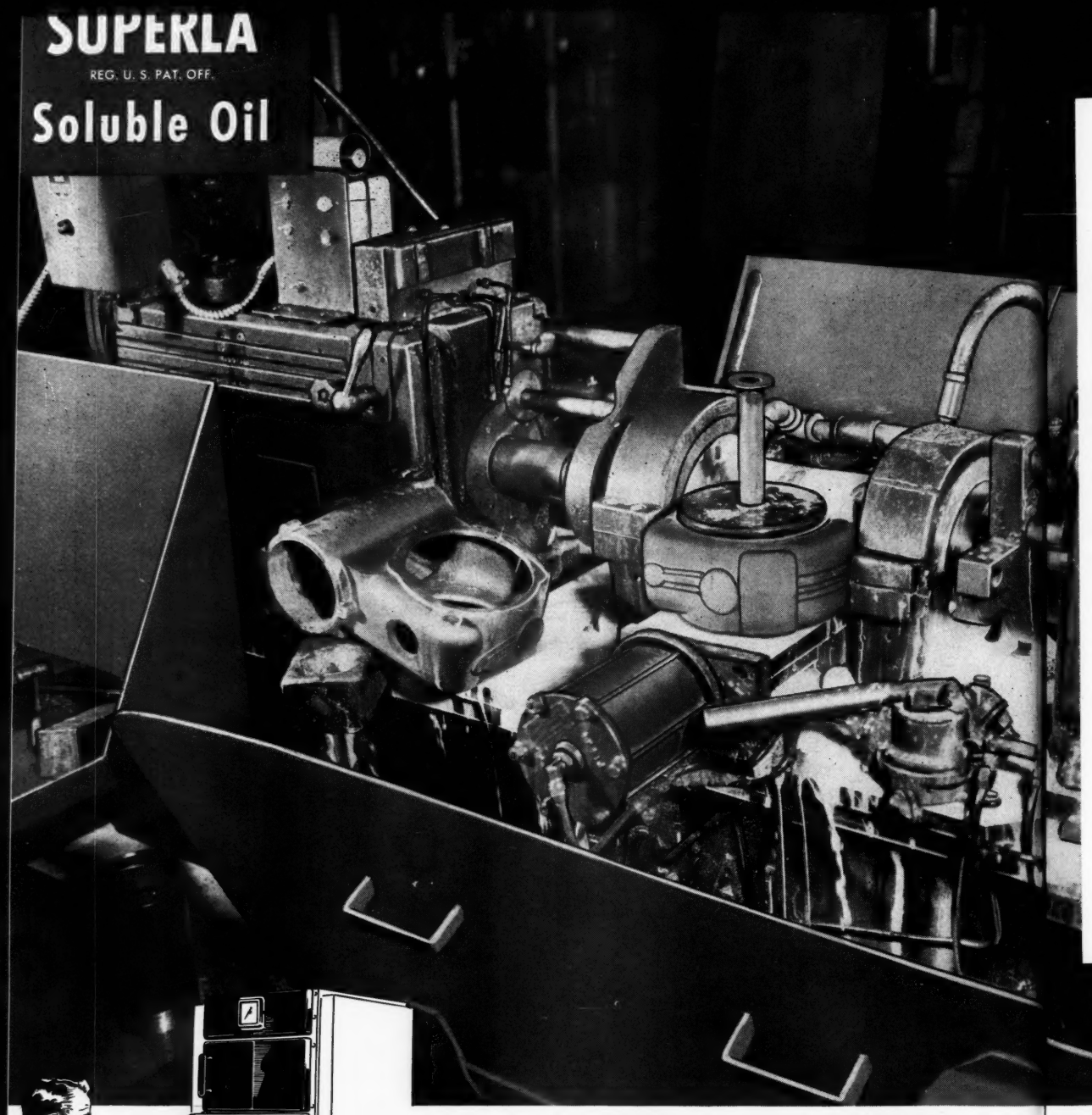
Soluble Oil



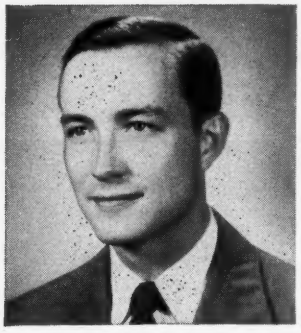
Solution for a hard water problem

"With the hard water we have at this plant, SUPERLA Soluble Oil works best of all products tried," reports Carl J. Winkler, president of U. S. Machine Corporation, Lebanon, Indiana. The company, manufacturing Winkler heating equipment, has used SUPERLA for 15 years. During this period, other coolants have been tried, but none has given the results obtained with SUPERLA Soluble Oil.

Boring of the cast iron main housing for a Winkler oil burner is illustrated above. With SUPERLA Soluble Oil, the life of carbide tools has proved excellent. There has been no spoilage of the work due to rusting. Moreover, clean operation and freedom from odor development with SUPERLA have provided desirable working conditions for machine operators.

To help select the right coolant or cutting oil for your own machine tool operations, call for the services of a Standard Oil lubrication specialist. Contact your nearby Standard Oil Company office.

What's YOUR problem?



Meet Wesley L. Tharp, lubrication specialist with headquarters at Standard Oil's Indianapolis office. U. S. Machine Corporation is one of the manufacturing companies he contacts regularly in order to help keep production running smoothly.

Like all Standard Oil lubrication specialists, Wesley Tharp has a good background of experience plus thorough training in Standard's own schools. And like all specialists, his on-the-job assistance is always available to the industries in the area he serves. He is one of a corps of experienced men who make their headquarters wherever industry is located throughout the Midwest.

Put a Standard Oil lubrication specialist to work on your problem.

STANDARD

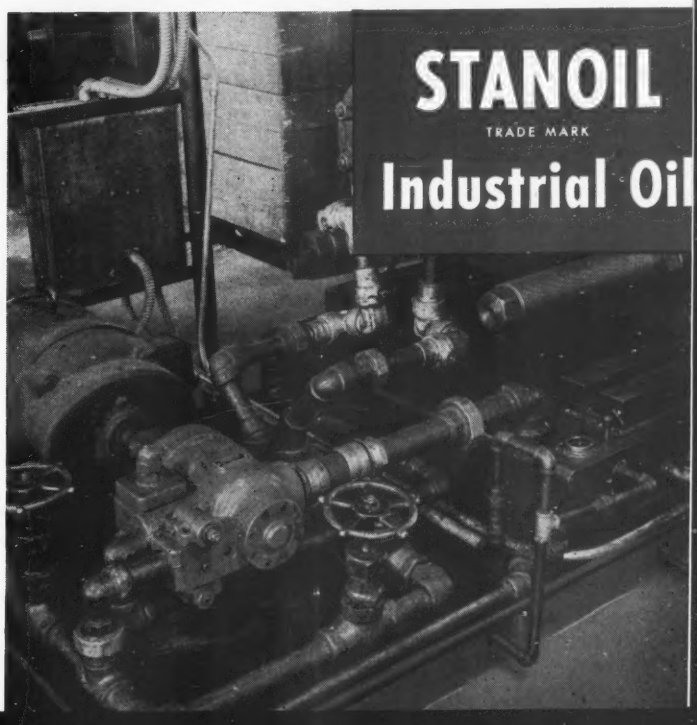
STANDARD OIL COMPANY

(INDIANA)

PUT MORE PUNCH INTO PRODUCTION with STANOSTAMP Compounds. Consider the case of this manufacturer of automotive components who boosted production from 10,000 piece parts to as many as 100,000 before dies required polishing. This was the result of switching from an oil base compound to STANOSTAMP Compound "C".

For maximum protection for both dies and work in your own pressroom, ask your Standard Oil lubrication specialist about STANOSTAMP. Three grades are available to cover a wide range of stamping and heavy drawing work on low carbon or alloy steel.

FIVE YEARS, NO CHANGE OF OIL. That's the record to date for the STANOIL Industrial Oil serving the hydraulic unit shown below. After five years of service the oil is in near-perfect condition. There is no deposit and no varnish in the hydraulic system. There has been no need to clean the system. For comparable trouble-free performance in your own hydraulic units, or for lubrication of speed reducers, head stock gears, auxiliary turbines, and compressors, call your local Standard Oil office. Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.



NOW! 3-way action against FINGERPRINT DAMAGE to precision steel parts

GULF NO-RUST F.P.R.

- displaces fingerprint moisture
- neutralizes perspiration acid
- lays down temporary rust preventive film

Precision metal parts can lose some of their precision as a result of an ordinary fingerprint. The moisture and acid corrode the polished surface, interfere with smooth operation.

Gulf's new fingerprint remover eliminates this cause of lost accuracy in precision-built mechanisms. Called Gulf No-Rust F.P.R., it displaces fingerprint moisture on metal, neutralizes perspiration acid, and lays down a temporary rust preventive film.

Gulf No-Rust F.P.R. may be applied by dipping, flooding, or spraying to steel, brass, copper, and other metal surfaces. It is readily removed with Gulf Stoddard Solvent or similar petroleum solvents.

Gulf No-Rust F.P.R. is one of a complete line of Gulf quality rust preventives from which you can select the proper protective coatings to meet all your requirements. A Gulf Sales Engineer will be glad to cooperate with you in the solution of your rust and corrosion problems. Write, wire, or phone your nearest Gulf office today.

Gulf Oil Corporation · Gulf Refining Company
Pittsburgh 30, Pennsylvania

GULF SERVES INDUSTRY

low cost heavy duty service with Foote Bros. MAXI-POWER

Costs go down when Foote Bros. Maxi-Power drives are installed! These rugged helical gear drives assure high efficiency — low maintenance costs — operate day after day, year in and year out without trouble and with minimum maintenance.

Precision-Generated Helical Gearing with uniform load distribution across the entire face permits maximum load carrying capacity in minimum space and assures the maximum in reliable, uninterrupted performance.

These drives are available in single, double and triple reductions, with ratios ranging from 2.08 to 1, up to 360 to 1. Capacities up to 1550 h.p.

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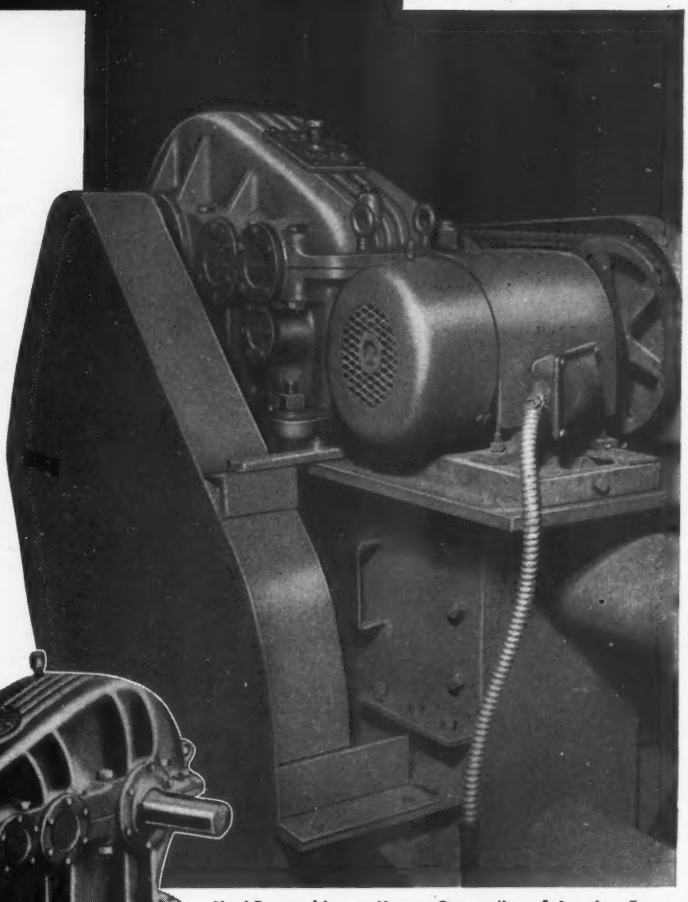
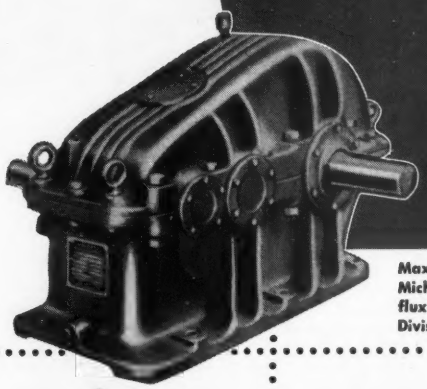
4545 South Western Blvd. • Chicago 9, Ill.

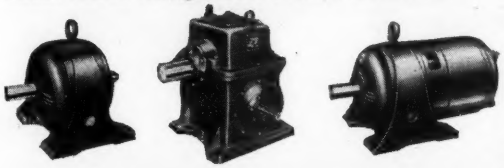




Maxi-Power drive at Murray Corporation of America, Ecorse Michigan Plant, driving tubular conveyor handling welding flux. Designed and manufactured by Hapman Conveyor Division of Hapman — Dutton Co., Kalamazoo, Michigan.

FOOTE BROS.

Better Power Transmission Through Better Gears



Foote Bros. Gear and Machine Corporation
Dept. X, 4545 S. Western Blvd., Chicago 9, Ill.

Please send Bulletin MPB containing full information on Maxi-Power Drives.

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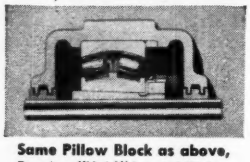
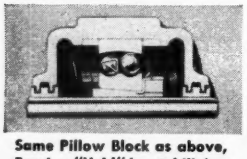
SKF TRIPLE-SEAL "SAF" PILLOW BLOCKS

"Free" Spherical Roller Bearing.



Same Pillow Block as above, Bearing "Held" by stabilizing ring.

"Free" Ball Bearing.



Same Pillow Block as above, Bearing "Held" by stabilizing ring.

Here's *why* the Series SAF Pillow Block is SKF's answer to your problems:

- Triple-Seal rotating rings give positive protection in dirty locations; effectively seal out foreign matter; seal in oil or grease.
- Stabilizing ring between the housing shoulder and the bearing insure fixed position of one held bearing on the shaft and prevents end movement of the shaft.
- Adapter-type bearings permit use of standard shafting, yet provides a *tight fit.*
- Easy to install and inspect; self-aligning.

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Write SKF for Folder No. 340 (for complete details), or contact your SKF Distributor.

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SKF®
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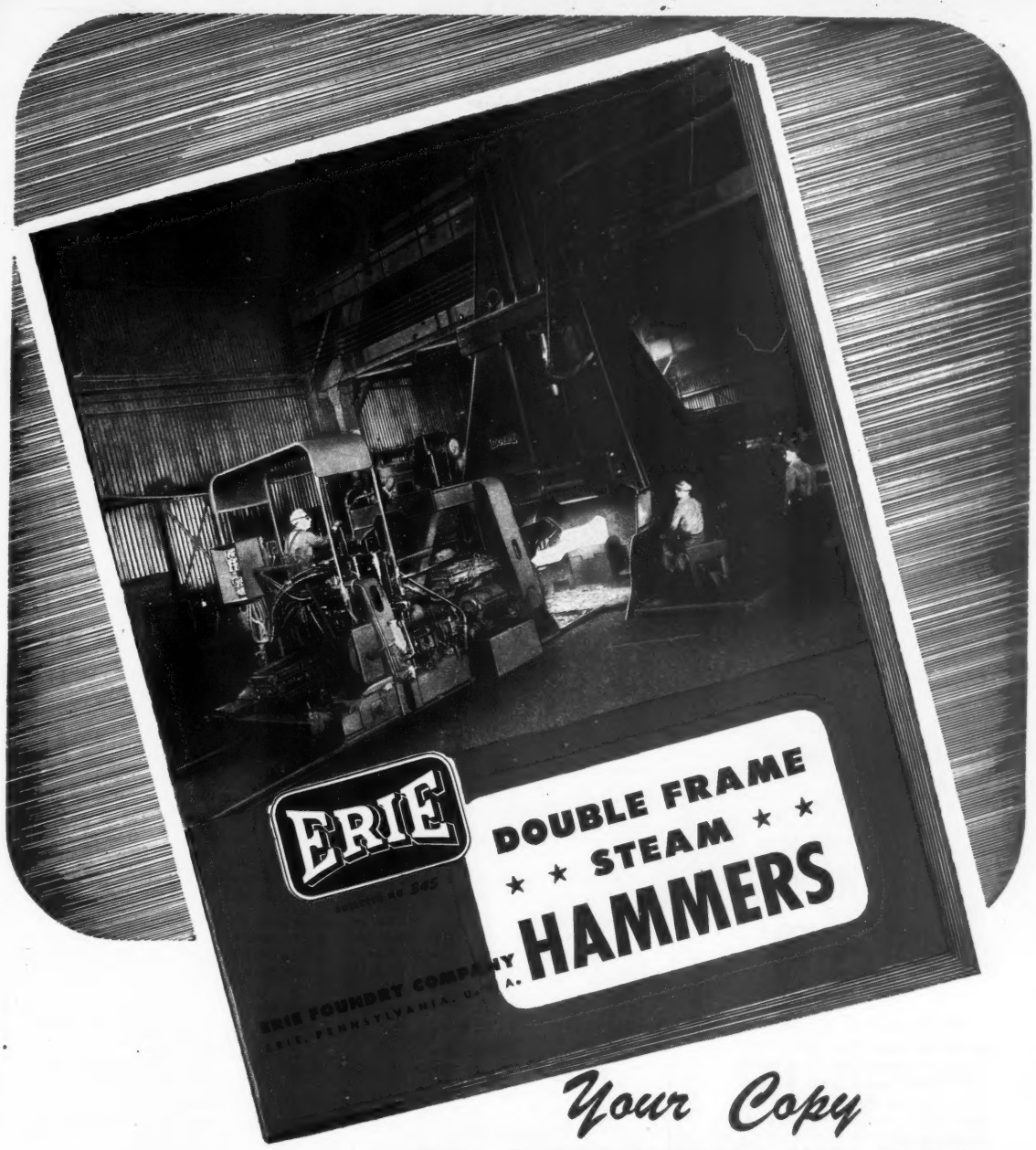

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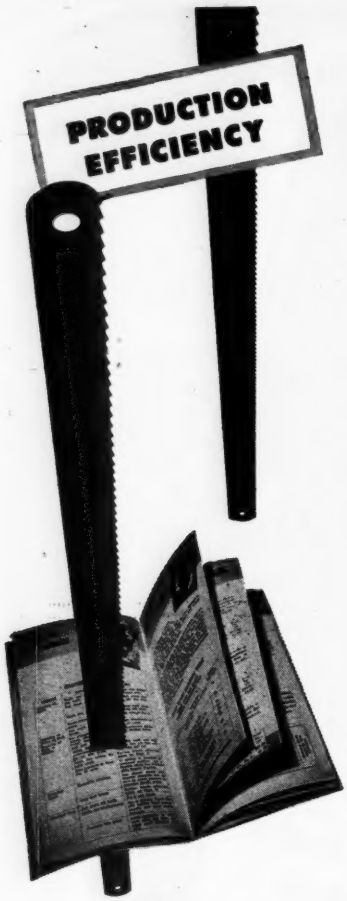

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Here's how to get efficient metal-cutting the *easy* way: Tell your supplier you want VICTOR hand and power hacksaw blades and flexible-back band saws, the brand most people buy.

Then ask him for a supply of VICTOR Metal-cutting Booklets — full of timely authoritative information on the selection, use and care of *any* blades, full of handy hints on fast, efficient metal-cutting.

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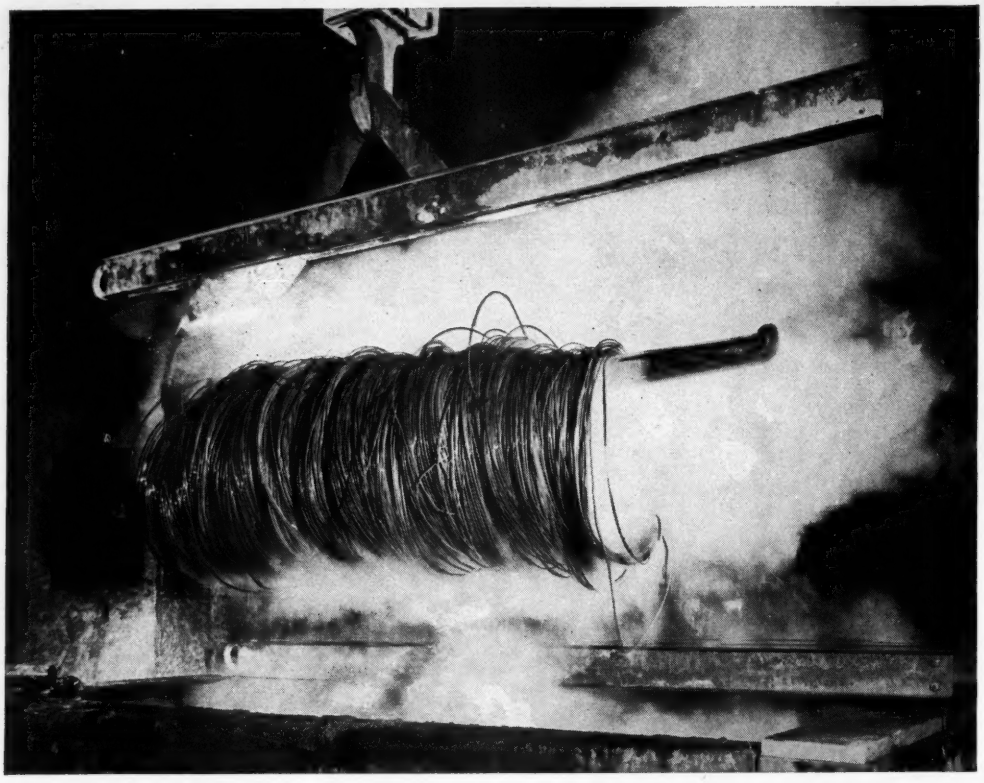

Monel pickling hook used at the Pittsburgh Steel Co., Pittsburgh, Pa. Fabricated by Youngstown Welding and Engineering Co., Youngstown, Ohio.

Reconditioned after 7 years in use!

Monel pickling hooks after "minor surgery" and welding are ready for more years of service

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Monel® was selected after many tests with other materials that failed in less than a year.

Operating conditions were tough, pickling in 10% sulfuric acid at 180°, carrying a load of 3,000 pounds.

But Pittsburgh Steel felt that Monel could take it.

And they were right!

After *seven* years in use, the hooks showed signs of weakening only at the acid line.

And the fabricators, Youngstown Welding & Engineering Co., remedied that!

They cut out the corroded section and welded in new Monel.

Now, Youngstown feels that the hooks are almost as good as new and will give many more years of service.

This is a typical example of how fabricated Monel pickling equipment can give long service life—then be reconditioned with a small amount of material to give additionally long service.

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INCO TRADE MARK **MONEL**...for minimum maintenance

August 25, 1952

Lining Up Steel

Steel buyers from the auto companies are swarming all over the country to line up steel. On conversion deals, they're leery of long-term commitments, but they're going the limit on forging bars and other products harder to get. The action makes sense for the near term because Detroit is short of third and fourth quarter steel. Yet, it's more surprising on long-term buying in view of sluggish new and used car sales, although one purchaser says he's doing it "just in case of a sharp upturn when new models come out." Auto men figure they can always cancel some of their long-term commitments if the improvement doesn't materialize.

Disagreement on Conversion

NPA figures that some 300,000 tons of conversion steel a month will be available in the fourth and first quarters (p. 64). Most of that could be used by auto makers, farm implement manufacturers, appliance people and other producers of heavy consumer goods, but the catch is that many of those manufacturers may not be able to afford the high-priced product. Inland Steel Co. and Great Lakes Steel Corp. are big factors in the conversion market. New producers will be coming in, such as Green River Steel Corp. and Seidelhuber Steel Rolling Mill Corp. Government planners are optimistic about conversion possibilities; some industry experts think the 300,000-ton-a-month figure is too high. If Washington is right, they point out, conversion will take a lot of pig iron and that will cause a dislocation among regular users of the hot metal, probably foundries.

Shift in Scrap?

Scrap prices have moved up to the ceilings, but watch for a drop back soon. The reason: Scrap inventories at 168 mills and foundries totaled 4.7 million tons as of July 31, an alltime high. Scrap prices rose right after the end of the strike because of a flurry of buying to balance stocks. Odds are the machinery to allocate scrap will be kept on a standby basis for another 30 days at least.

Components Snarl Slows Output

Shortages of specialized components and tubes which must pass strict performance tests are slowing output of new types of military electronic equipment. Major problems are delayed deliveries and shortages of quartz crystals, metallized capacitors, relays, hermetically sealed motors, transformers and a few types of tubes. One possible cure is the supplying of needed tubes as government-furnished equipment.

More Help on Machine Tools

Look for further liberalization of machine tool controls. Some 200 machine tool builders, particularly smaller ones, are running out of defense and rated orders and face layoffs of mechanics in fourth

Production-Engineering News—p. 91 *The Market Outlook—p. 141*

quarter this year and first quarter of next. The M-41 Amendment of July 25, 1952, failed to spur a lot of unrated buying largely because it lists a number of machine tools as still in critical supply and to which permission to ship on unrated orders does not apply. Loosening may take the form of an amendment to Section 4 of M-41 which would permit extension of defense-support ratings to critical tools for civilian industry under certain conditions.

U.S. Plants: Hot Issue

A hot issue in the next session of Congress will be a Defense Production Administration proposal for the government to build factories when private industry is "unable or unwilling" to do the job. DPA Chief Henry H. Fowler is already plugging the idea and meeting opposition. He insists he has no intention of sponsoring a federal factory program as broad as the one operated in World War II.

More Coal Stoppages?

The ten-day stoppage of mining operations in soft coal pits will end Sept. 1 and will involve the loss of only five working days. It won't cut back the current 84-day coal stocks seriously, and John L. Lewis can be expected to try similar stoppages before a new coal contract is finally negotiated.

Labor Market Eases

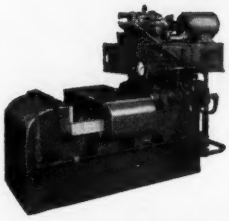
The labor market is easing up. Many skilled workers are as difficult as ever to find, but semiskilled employees are readily available in most areas. The situation should remain about as it is now for the next four to six months, and then improve still more. The steel strike caused some labor dislocations as nonfarm employment dropped to 45.9 million in mid-July. That's straightening out now. Long-term outlook for labor availability is good because of the continuing growth in the population. The total number of people in the U.S. is an estimated 157 million, 1.2 million more than at the beginning of the year.

Straws in the Wind

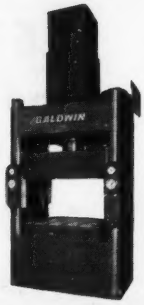
Robert H. Winn, NPA's compliance chief, holds conferences in Chicago today, in Cleveland tomorrow and in Detroit Thursday to explain the importance of holding down steel inventories until the end of this year . . . About half the 25-million-gross-ton loss of iron ore during the steel strike can be made up, ore men now believe, if the shipping lanes remain open in November . . . Your CMP-4B forms for controlled materials for the first quarter must be filed by Sept. 8 . . . Aluminum Co. of America plans to build an aluminum smelting plant on the Yukon river in Alaska; bauxite will come from Dutch Guiana.

What Industry Is Doing

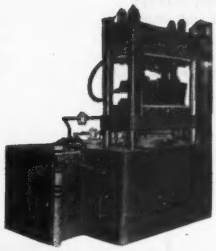
The Controlled Materials Plan may be dropped early in the second quarter of 1953 (p. 63) . . . Increased government stockpiling will complicate civilian supplies (p. 64) . . . Most steel prices will rise to the new OPS ceiling (p. 66) . . . The carbide tool industry is expanding rapidly, as manufacturers need tools to machine tricky alloys at high speeds (p. 67) . . . Nonmanufacturing firms kept their lead in capital outlays by spending a stiff $15 billion during 1951 (p. 73).



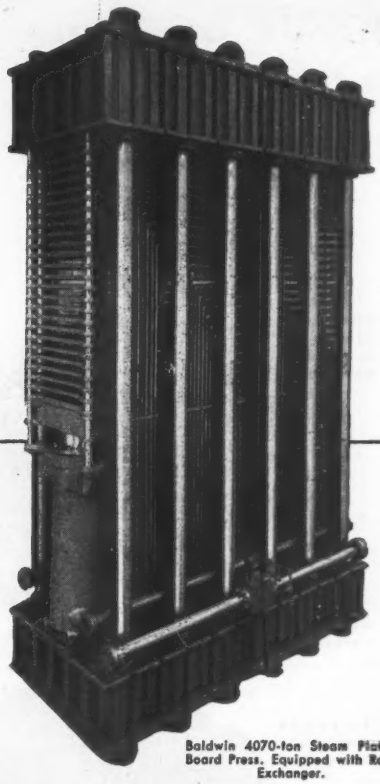
Baldwin 100-ton Horizontal Press. Equipped with Ross Exchanger.



Baldwin 250-ton Single Acting Press. Equipped with Ross Exchanger.



Baldwin 200-ton Compression Molding Press. Ross Exchanger equipped.



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hydraulic oil never gets a chance to overheat here

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● Full production from any of these Baldwin Hydraulic Presses depends on operation at specified oil pump capacity . . . at rated GPM. Should internal leakage or pump slippage occur, press capacity could not be reached or maintained.

But Baldwin-Lima-Hamilton Corporation takes no such risks with its hydraulic presses. They are equipped with Ross Type BCF Exchangers to keep hydraulic fluid within the most effective temperature range. Oil never gets the chance to overheat . . . to thin and thereby cause pump slippage.

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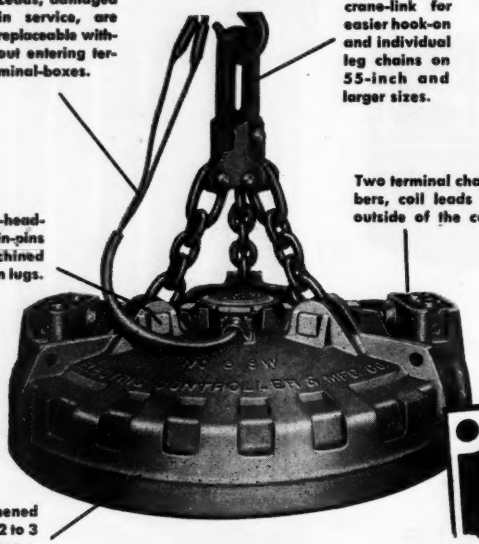
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Square-headed chain-pins in machined holes in lugs.
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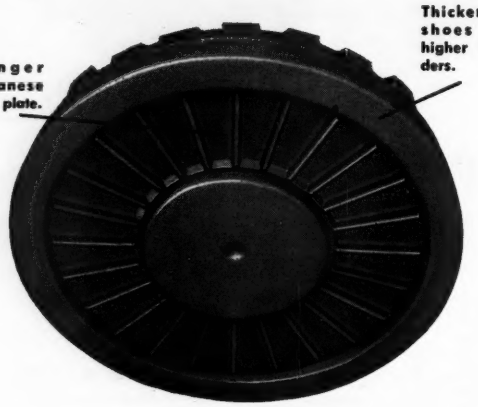
TYPE SW *All-Welded* LIFTING MAGNET
SIZE ____ SER. ____ FOL. ____
PERCENT TIME ON ____



EC&M developed the *All-Welded* lifting magnet, which by eliminating pole shoe bolt recesses, gave a better proportion of coil space. Now, new insulating materials are used for further improvement of the coil. Between turns, new purer asbestos tape is thinner because of its improved quality; and impregnated with EC&M 281 liquid to increase its mechanical strength. For use between layers, EC&M has developed ECAMICA Board having high dielectric strength and excellent mechanical durability. ECAMICA Board is far superior to any previous insulation used in lifting magnets.

ECAMICA Board—an EC&M development of major importance for insulation between coil-layers.

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The Golden Egg

John L. Lewis has served notice that United Mine Workers of America wishes to negotiate a new contract. His demands have not been divulged, but it can be assumed that they probably will exceed the terms on which the steel strike was settled.

To the implied criticism that such terms may have an adverse effect on coal consumption, Mr. Lewis is reported by Research Institute of America Inc., to have said: "Coal is not going to be priced out of the market and the UMWA is not killing the goose that laid the golden egg. We know our egg. We know how long to boil it and we know when to eat it."

This typical Lewis pronouncement reflects cocksureness. It indicates that he is confident that he knows exactly how much of a load the economy of coal mining can carry. If union leaders such as John Lewis, Philip Murray, William Green and Walter Reuther actually are concerned with whether or not their demands will injure the economy of their respective industries and if they conscientiously refrain from going too far in their demands, that concern and that restraint would be welcome news to everybody in the nation.

Unfortunately, current developments show no sign of such concern and restraint. They indicate the opposite. United Auto Workers' contracts provide for a four-cent-an-hour wage increase annually in exchange for "a co-operative attitude on the part of all parties" toward technological progress. Yet newly installed conveyors and cost-saving machinery in automobile plants remain idle because union members threaten to walk out if they are placed in operation. Last week 2000 employees in a continuous strip mill engaged in an unauthorized strike because the company refused workers' demands that an additional man be hired on a new pickling line. Union and steel company representatives still are haggling over "management clauses" in their new contracts because the unions demand featherbedding that will nullify technological progress.

Such nullification is one certain way of killing the goose that lays the golden egg. Do union bosses know their egg as well as Mr. Lewis thinks they do?

E. L. Shaner

EDITOR-IN-CHIEF

AN ATTRACTIVE MARKET: Most of us regard the new plant and equipment expenditures of the manufacturing industries as a major market for metalworking establishments. They are. In 1952 their outlay will be roughly $11.5 billion. Historically—at least in recent years— the plant and equipment expenditures of nonmanufacturing enterprises have been

even greater. In 1952 they will exceed $16 billion.

In the nonmanufacturing category are mining, transportation, communications, public utilities and similar services. In point of dollars spent for new facilities (p. 73), the public utilities will rank first in 1952. This reflects the marked increase in demand for power for aluminum production, atomic energy projects and for industrial and household consumption. The pertinent point is that the strong emphasis on demand for electricity for relatively new technological developments is creating an attractive market for numerous metalworking concerns.

* * *

CUTS DEEPLY AND FAST: Recent growth in the use of coated abrasives is attributed in large measure to the development of machines to use them more effectively and to improvements in coated abrasives themselves. One of these major improvements is the method of applying the abrasive grits to the primary adhesive coating on the backing material electrostatically instead of by the former gravity method.

The grains are charged in an electrostatic field (pp. 94, 96) which gives each end of a grain an opposite charge. A negative electrode attracts the positive end of the grain causing the grains to stand upright in the adhesive coating. This makes for sharp upright points and more uniform disposal of grain particles. These account for the ability of the electrostatically coated abrasives to cut deeply and at high speeds.

* * *

PAYS FOR SELF QUICKLY: If somebody were to tell you that a certain machine would pay for itself in a month, you would be extremely skeptical, and rightly so. Rare, indeed, are opportunities for a new machine to effect savings rapidly enough to enable the operator to get back his investment so promptly.

Nevertheless, an automotive manufacturer actually has had this gratifying experience. He was having trouble reconditioning molds for contoured windshields after the glass had cooled. The refinishing operation (p. 92) involved expensive time-consuming, hand-lapping with various abrasive cloths. Solution of the problem was found in a machine employing a wide coated abrasive belt backed by a form contoured to fit the mold. The machine performed in minutes the operation that previously had required hours. It actually paid for itself in less than a month. In another case a strip scouring machine in a steel mill paid for itself in the first day of operation.

Machines employing coated abrasives are rapidly becoming a metalworking tool of major importance. Recent applications merit the attention of manufacturers who have finishing problems.

* * *

NATURAL—NOT EERIE: Last week a House Expenditures Subcommittee disclosed the testimony of witnesses that scrap piles behind the battle lines in South Korea had a "vague and eerie" tendency to "disappear overnight." They reported that peasants combed deserted battlefields, loaded "fabulous" quantities of scrap on their backs and either hid it or smuggled it to off-shore junks.

To anybody who knows anything about what happened since V-J Day on the mainland in the Far East, this disappearance of battlefield scrap is not surprising. On the day hostilities ended, millions of persons were freed for the first time in decades from Japanese discipline. Uncontrolled mobs swept through every industrial plant, taking everything that was movable. Leather belting, light bulbs, small motors, ball bearings, bolts, nuts, and other articles acquired by this looting was openly displayed for sale in every "flea market" in the Orient.

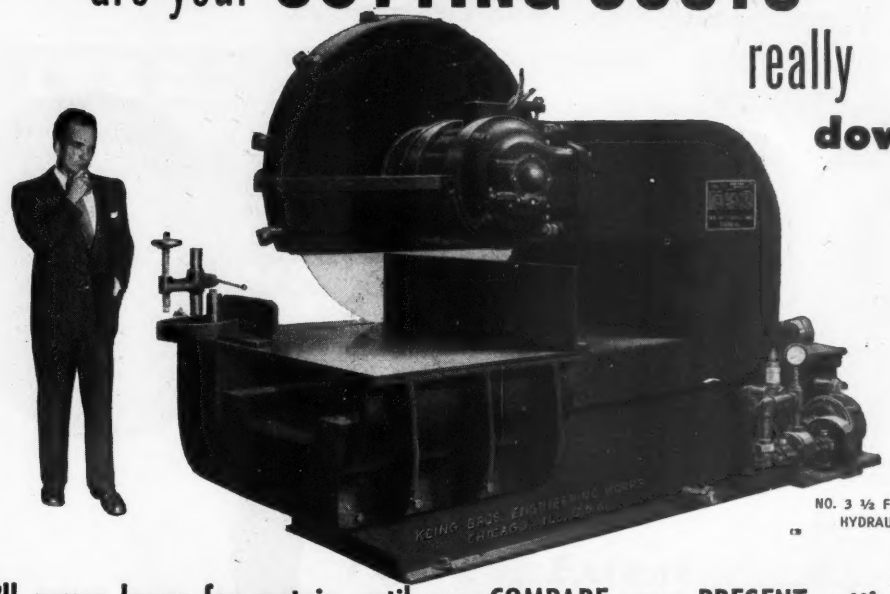
Our authorities in Korea should have expected and should have been prepared for the not-so-strange disappearance of scrap.

* * *

MAKE MUCH OF LITTLE: While we are on the subject of Korea, it should be mentioned that this publication's editors were fortunate in receiving from A. S. Martin, president of the King Fifth Wheel Co., a series of interesting photographs which he took while serving as senior adviser in the American Military Advisory Group to the Republic of Korea. They show clearly (pp. 74, 75) how the ingenuity of native Korean craftsmen enables them to make useful articles out of crude materials.

Nails, ranging from 2 to 20d, are worked up from angle iron and scrap. Cupolas, from which a primitive sort of iron is tapped, usually are made of discarded oil drums. Source of the most versatile material is the abundant supply of American beer cans. From them the Koreans make buttons, pails, food containers, cooking utensils and roofing sheets.

are your CUTTING COSTS really down far enough ?



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15" 55 lb. Channel	15 seconds
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100 lb. A.R.A. Rail	9 seconds
6-1/2"x6-1/2"x19.8 lb. Tee	5 seconds
8"x8"x3/4" Angle	11 seconds
3" Square	10 seconds
4" Round	15 seconds
6" O.D. Tube, 1/2" Wall	11 seconds

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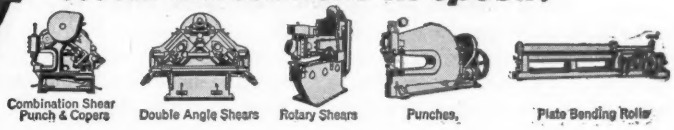

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So rapid is the recovery from the steel strike that CMP could be revoked by next spring—if all goes well. An open-end plan may be tried in the first quarter

THE CONTROLLED Materials Plan may be revoked early in the second quarter of 1953—if everything goes along on schedule.

Chances were once good that steel and aluminum would be freed by yearend and that copper restrictions could be lifted early in 1953 (STEEL, Feb. 25, p. 47). The steel strike ruined chances for lifting ourbs on steel that early. Uncertainties about military ordering of copper and aluminum, in part caused by steel strike disruptions, now make it unlikely that all restrictions on those nonferrous metals can be lifted before spring.

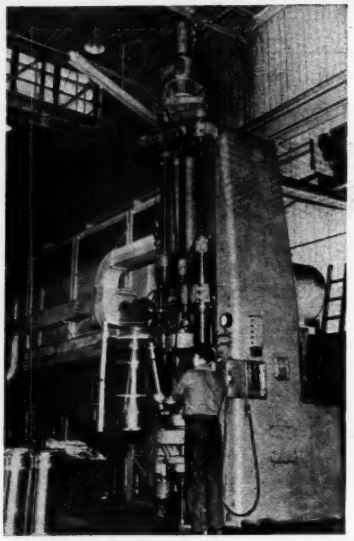
Miraculous — What's surprising is that decontrol is possible by spring. It's in the cards because steel production is making nearly a miraculous recovery from the effects of the strike. Production is at 97 per cent of capacity; all companies have signed with the union (despite summer heat strike); and the drive is on to clean up the military carry-over by Sept. 30. If it can't be done quite that soon, most of it will be taken care of before Nov. 30, the target date the industry originally promised to aim for. What little is not cleaned up before the deadline will be that on order books of mills hit hard with emergency steel directives issued during the strike.

U. S. Steel Corp. reportedly is hiking deliveries against military orders in August from a normal 8 per cent to about 19 per cent of production. The same drive to take care of the military is also boosting deliveries from other mills. Military orders which were hard to place before the strike are now being accepted and scheduled for delivery promptly.

Preliminary—As a step preliminary to outright revocation of CMP, may be a decision to "open-end" the program in the first quarter. If that were to be done, available controlled materials could be bought and sold without tickets if, at the expiration of lead time, mill schedules have open space.

Signs are already numerous that decontrol may come quickly. Copper supply and demand are virtually in balance. Aluminum shortages are not serious. In a meeting next Tuesday between NPA and the Construction Industry Advisory Committee, builders will get details on the lifting of shackles on that industry sometime in the first quarter. Many manufacturers, including automakers, have already been advised that they need no longer reduce their use of aluminum and copper. While the present plan is to hold fourth quarter steel allotments to 80 per cent of the third quarter, it is now expected that additional rations may be available for December deliveries. Rules on conversion steel have already been relaxed (see the story on p. 64).

Hitch—Some hitches could arise, of course, that would throw present thinking on the timetable for decontrol out the window. A power shortage in the Pacific Northwest would cut aluminum production disastrously in the fourth quarter. Military requirements might increase unexpectedly, either because of new war scares or the decision to freeze designs and start mass



Close Limits

Surface hardness, depth of case and grain structure of cylinder liners are held to close limits by this automatic electric induction heat treating machine at National Supply Co., Toledo, O., oil field equipment manufacturer and distributor. Liners come out of machine without scale and are hardened only on inside surface

production. National stockpiling may rise markedly (see the following story).

While any or all of those possibilities may disturb the timetable for decontrol, a reasonable amount of good luck should see the end of CMP early in the second quarter. As early as next month may come the hint of the decontrol tonic next spring for business. First quarter program determinations are due in September, and they promise to be liberal.

Restoring the Stockpile

Renewed drive to stockpile critical materials will complicate civilian supplies

THE LONG ARM of the government's stockpiling program will be especially busy gathering in caches of controlled materials from now to at least the first of the year. That's going to further complicate the supply picture and tend to push back decontrol.

Stockpilers want to make up for the diversions and withdrawals of critical materials made in the first half of this year. Diversions amounted to $29 million worth in first half, 1952, and now total $149 million worth. Withdrawals were $11 million worth in the first half and now total $51 million worth.

In and Out Again—Materials diverted from stockpile deliveries were aluminum, copper, nickel, cobalt, acid grade fluorspar, tungsten and zinc. Withdrawn from the stockpiles were aluminum, copper, cryolite, lead, rutile, zinc.

Added to the catch-up activities, the national stockpile program still calls for a total of $7.8 billion in critical materials of all kinds at current prices of which only $3.6 billion was in the stockpiles on June 30, 1952. During the past six months stockpile objectives for 27 materials were reviewed with an eye to either increase or decrease them where necessary. Net effect: Reduction of about $374 million in stockpile objectives.

Importance Is Relative—In case you've forgotten, this is the way the various programs line up for controlled materials handouts: Number one is the atomic energy and military production programs of both the U. S. and our allies; then comes defense-supporting and essential civilian production, including maintenance of the U. S. economy at a healthy level and the support of essential export programs; in third position are additions to the national stockpile and finally other civilian production.

The Munitions Board notes that, while deliveries were good for nearly all materials sought for the stockpile in the first half of 1952, deliveries of metals and minerals as a group continued to be unsatisfactory. But, they say, deliveries are expected to definitely improve in the second half of the year.

Aluminum stocking will begin in the fourth quarter, 1952. Defense Production Administrator Henry H. Fowler says increased production due then will be shared by civilian producers and the stockpile. About 25,000 tons of copper is expected to go to the stockpile as partial repayment for withdrawals to provide for uncashed allotments during the second half of 1951 and the first half of 1952.

Conversion Steel: Short-Term Aid

The relaxation of curbs on steel produced via conversion will help those who can use ordinary-quality flat-rolled and to whom cost is no object

THE NEW NPA orders liberalizing distribution curbs on conversion steel will help—but not much.

High costs, a declining number of facilities available to produce conversion steel and the relatively narrow range of products it is practical to produce via the conversion route—all those factors combine to limit the usefulness of the relaxations.

The Order—In Direction 19 to CMP Regulation 1 and in Direction 7 to CMP Regulation 6, NPA authorizes all builders and manufacturers who have government-approved construction and production schedules to buy 500 tons of finished carbon steel products in the fourth quarter and the first quarter of 1953, without those purchases being charged to regular allotments. If you need more than 500 tons of conversion steel in each of the quarters, you can buy it in an amount up to 40 per cent of regular allotments, but you get tonnage above 40 per cent charged against your tickets.

Conversion steel costs anywhere from 75 per cent to 200 per cent more than regular steel costs (the base price of hot-rolled sheets is now about $75.50 a ton). The cross-hauling and handling charges involved in getting the steel processed in two or more plants accounts for the high price. Users who think full production in the fourth and first quarters is worth any cost will find the new rules helpful. But auto and farm implement buyers, in the past the heaviest purchasers of that type of steel, are now worried about the cost. Automakers, especially (see p. 77), are cautious because of sluggish sales of new cars.

Drawback—A second factor limiting the use of conversion steel is

the increasing difficulty in arranging such deals. In the Chicago area that problem is not so serious because Inland Steel Co., always a substantial factor in the conversion market, is still in the business. But elsewhere, buyers have more trouble lining up open capacities. Since 1950-51 when the last big flurry in conversion occurred, the industry has balanced its facilities better through expansion programs and there's a closer relation between ingot and finishing capacities.

What's more, electric furnaces supply the bulk of all conversion ingots, and more of them now are being devoted to production of special-purpose ingots for the military. More than 300,000 tons of finished steel a month was turned out during the 1950-51 shortage via conversion. It's not possible to get that much now. Even Inland, which turned out 493,498 tons of finished steel via conversion in 1951 and which at times has devoted as much as 16 to 18 per cent of its finishing capacity to conversion, doesn't expect to go that high in the fourth and first quarters.

Limit—A third problem limiting the use of conversion is the narrow range of products practical to be turned out by the method. If forging bars or other particularly scarce products could be acquired that way, there would be a wild rush to conversion. But the conversion route yields mostly flat-rolled items of ordinary quality—in short supply now but perhaps fairly easily obtained in a few months. Even in flat-rolled there are limits. Inland, for example, will handle conversion orders for hot-rolled only.

Yet there will be conversion steel available. If cost is no object and you can use ordinary-quality flat-rolled, your steel supply problems can be solved in the fourth and first quarters.

J&L Totals Up

Jones & Laughlin Steel Corp. announces a $4,601,000 net profit for the first half of 1952 after sustaining a $110,000 net loss in the second quarter, 1952. Explanation of the second quarter loss: Added costs resulting from the steel strike and from initial starting up of large items of new equipment.

Comparison with J&L's year ago totals shows a $15,736,000 net profit for the first half, 1951, and $8,063,000 net profit for the second quarter, 1951. Among the added costs this year was about $4.5 million set aside to cover retroactive pay increases called for in the latest steel strike settlement.

Thermit Welding: A Pyro-technique

A 39½-ton cast-steel stern frame for one of the five C-4 Mariner-type ships to be built at the San Francisco shipyard of Bethlehem Pacific Coast Steel Corp. is being thermit welded. A completed weld may be seen in the right section of the frame near the hub. The weld being made uses 2350 pounds of thermit

New Price Formula: On a Merry-Go-Round

AROUND AND around they go; where they'll stop nobody can yet know.

That's what's happening on the problem of higher price ceilings for manufactured goods, to reflect the rises in metal prices, wage rates and freight charges. Ten days ago the pass-through looked like it might be 60 per cent of the total increased costs; a week ago the percentage that appeared to be acceptable to stabilizers rose to 80 (STEEL, Aug. 18, p.65); now the thinking is that it may still be somewhere in that 60-80 range, but the method of getting there should be different.

Delay—The problem is not expected to be solved before late this week, and it's now the subject of conferences between Acting Defense Mobilizer John R. Steelman and Economic Stabilizer Roger L. Putnam. The current idea is to pass through 100 per cent of the increase in the prices of steel, aluminum and copper. No allowance in the basic pass-through formula would be allowed for increased wage or freight rates. Washington planners believe that freight rates don't have an important bearing on prices of many manufactured goods and should be dropped from the basic formula. In the cases where freight is important, special help may be coming. Wage increases would be taken into account in a proposed more liberal form of the earnings standard, on the ground that such a method would be a fairer way of handling the wage pass-through.

Nobody yet knows how that latest method of figuring the several pass-throughs would leave the manufacturer—certainly with more paper work than the original straight pass-through would have meant, perhaps with a percentage increase even lower than the 60

that the OPS economists were originally willing to allow.

Steel Prices: As Expected

The new quotations generally are to the new ceiling and maintain the old differentials

STEEL COMPANIES have not yet all announced all their prices, but enough are in to see the trend.

New prices announced as of last Thursday are on pp. 143-145 and 147.

Hit the Ceiling—Generally, most prices were raised to the limit of the new OPS ceilings, an average of $5.20 per ton on carbon grades and 4.7 per cent on other products. The old differentials from product to product, company to company and mill to mill remain in most cases. There's an occasional variation from the old pattern. U. S. Steel Co., for example, used to quote the same prices for nails and staples. Now nails have been raised $9 a ton and staples only $8.

The price advances caused few surprises to steel buyers last week. The new quotations are expected to result in only minor revisions in specifications to lower the cost of the steel in end products. Often after general price shifts, there's a gradual but widespread shift in specifications to take advantage of new differentials from steel product to steel product.

Steel: No Easy Mark

The task of devising and applying a system of marking alloy steels to identify them by compositions is proving more difficult than contemplated when the Munitions Board launched the move last fall.

The proposal came from consumers, mainly aircraft manufacturers, whose private marking systems were proving inadequate. Objections have come from the suppliers—steel mills and warehouses—who say that marking would be an additional, very expensive operation which they would be unwilling to absorb until such time at least as a feasible marking system had been worked out.

A number of questions must be solved: What kind of a color system could be devised without its getting too complicated for universal use? How would you put paint or ink marks on hot steel as it comes from the mill? How would you mark a cold-drawn bar through a coating of grease? What kind of machine would you employ for marking continuously — so that every piece sawed from a bar would bear the mark?

Defense Production Administration's Conservation Division has sent to interested firms and individuals the findings to date. Comments will be studied. In the meantime a research contract has been awarded to Mellon Institute to study the problem, particularly that relating to machines that would lend themselves effectively and economically to continuous marking.

DMPA Approves $672 Million

Defense Materials Procurement Agency gave its approval to 436 expansion projects in the mineral and metals industry during the fiscal year ended June 30. Industry outlay for the 436 projects totaled $672 million, says DMPA. Priority ratings in connection with the projects were issued on $196 million in production machinery and $32.6 million in construction equipment.

Third Quarter Expansion Swells

In a supplemental list of third quarter, 1952, controlled materials allotments, National Production Authority announced approval of 247 additional industrial expansion projects with an estimated value of $603 million. Previously, NPA granted materials for 830 projects worth about $1 billion (STEEL, June 16, p. 78).

New projects costing more than $266 million account for 184 of the supplemental approvals.

The aircraft program has the highest estimated cost at $138.2 million for 24 projects. However, the chemical industry has the largest number of programs, 57, worth $130.2 million. The only other industry with more than $100 million expansion planned is pulp, paper and paperboard with 10 projects worth $110.3 million.

Yolo Wants Third Certificate

Yolo Steel & Metal Corp., Sacramento, Calif., considering ap-

DPA Sets Expansion Goals for 16 More Industries

DEFENSE Production Administration announced expansion goals for 16 industries.

These important goals provide the basis for DPA's Office of Construction & Resources Expansion to provide government aid to achieve the needed expansion.

The $5 million goal for tapered aluminum sheet will be financed by the government. Fabricators using these aluminum facilities will provide complementary equipment to operate the new facilities. Rapid tax amortization is available on this equipment, says DPA.

DPA EXPANSION GOALS

PROGRAM	GOAL IN TERMS OF OUTLAY OR PROPOSED CAPACITY	TERMINAL DATES	PER CENT OF CERTIFICATES OF NECESSITY ALREADY ISSUED FOR PROGRAM
Pumping machinery	$35,000,000	July 1, 1950—July 1, 1954	66
Miniature electric motors	6,000,000	Jan. 1, 1951—Jan. 1, 1954	80-85
Tapered aluminum sheet	5,000,000	*	*
Special components	18,000,000	Jan. 1, 1951—Jan. 1, 1954	**
Antifriction bearings	77,000,000	—July 1, 1954	***
Friction bearings	10,000,000	July 1, 1951—July 1, 1954	***
Photo. film & paper	22,000,000	June 1, 1951—June 1, 1953	**
Tubular heat exchgrs.	58.5 million sq ft yearly	Jan. 1, 1951—Jan. 1, 1954	65
Filament tape	20 million sq yds yearly	Jan. 1, 1951—Jan. 1, 1955	50.3
Acetate tape	16 million sq yds yearly	Jan. 1, 1951—Jan. 1, 1955	72
Fibrous glass	104.7 million lbs yearly	Jan. 1, 1951—Jan. 1, 1955	100
Optical glass	6 million lbs yearly	Jan. 1, 1951—Jan. 1, 1955	100
Steel strapping	550,000 tons yearly	Jan. 1, 1951—Jan. 1, 1955	9
Potash	2 million short tons yearly	Jan. 1, 1951—Jan. 1, 1954	100
Metal tanks	1.5 million tons steel consumed in fabrication	Jan. 1, 1951—Jan. 1, 1953	**
Regenerative air preheaters	384 units	Jan. 1, 1951—Jan. 1, 1954	***

* Program is at government expense.
** Not given.
*** Practically all certificates are already issued.

plication for its third certificate of necessity since Mar. 5. The first two—for $44,405,000 and $81,250,000—were for a blast furnace, by-product coke ovens, power plant, open-hearth capacity and necessary finishing facilities. The third will be for $11 million for a tin plate mill.

The company, which has not yet begun construction, is headed by G. I. Dumond who controls the iron ore which the firm will use. While no definite site has been announced for the plant, company spokesmen say it will be in California's Yolo county.

Amortization Certificates Issued

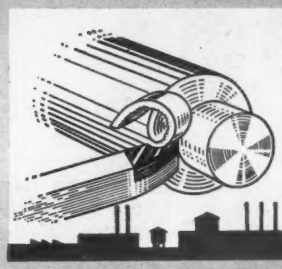
Certificates of necessity for rapid tax amortization on 120 new or expanded defense facilities were handed out from Aug. 1 through Aug. 6 by the Defense Production Administration. That week, DPA denied 46 applications which would have involved $89 million in expansion costs.

Among the largest certificates were those issued to the Pittsburgh Steel Co., Monessen, Pa., for expansion of metallurgical coke and chemicals facilities costing $11.2 million, 85 per cent allowed for 5-year writeoff; and U. S. Steel Co., Lorain, O., metallurgical coke, $6.3 million, with 50 per cent of the cost allowed for rapid amortization.

PAD Holds Up 150 Applications

Serious shortage of oil-country tubular goods caused Petroleum Administration for Defense to hold up more than 150 approved applications for purchases of pipe by small operators. J. Ed Warren, PAD chief, blamed the steel strike and misuse of stocks by some operators for the shortage.

Small operators depend on emergency stocks for exploratory or wildcat drilling. Because those stocks are practically depleted, Mr. Warren does not expect the pre-strike drilling-operations level to be reached again until early 1953. Present deliveries of tubular goods from the mills are going for orders and authorizations for second quarter or earlier.



Carbide Tools: The Tip's The Trick

THE CARBIDE TIP'S getting around industry. A tough little shaver in 1939 with $7 million sales, carbide tools cut a solid $55 million sales slice in 1951 and are well on their way to $60 million this year despite the steel strike.

Biggest single impetus to the industry's growth was the war. Need for tools to machine tricky alloys at high speeds with close tolerances and good finish gave carbide its chance to shine. As the tipmakers began to hit the chips, a rash of carbide tool grinding shops swept the country. Many were divisions of reliable tool companies or soundly established new firms. Others were manned by toolmakers who had flunked out of every shop in town and were attracted by the high return on relatively low investment.

Goodbye, Mr. Chips—The chip-rakers didn't last long. By the end of the war, carbide tools had established themselves in industry and know-how had separated the men from the boys. Competition is still keen in the field, and prices today are about one-third what they were 15 years ago for a standard tool partly due to better toolmaking methods, fixtures and wheels, coupled with higher volume.

The 1000 or more shops that grind carbide tools and the one to two dozen companies that supply them with the tungsten carbide blanks are keeping busy but there's not the mad scramble there once was. Carbide-tipped tool bits, milling cutters, reamers, taps, drills and nearly all standard sizes and types of cutting tools can be purchased from distributors' stocks and are mass-produced. Special tools and dies for which carbide blanks must be brazed to steel stock and ground to the required shape and dimensions are the vast bulk of the grinders' business. In many cases, blanks may be purchased which are roughed to the required shape thus reducing the amount of grinding time and the cost of the tool.

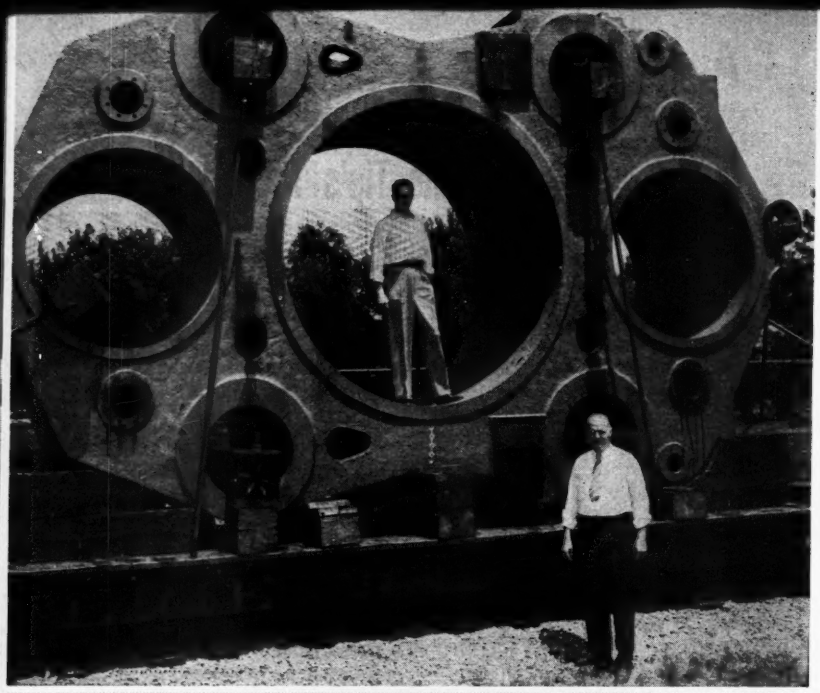
Top Tip Customer—The automotive industry lends itself neatly to the use of carbide tools and is probably the top customer. Production runs are long and in high quantity so that the more expensive tools pay off in long tool life and higher speed output. Tolerances demanded also are held for a longer period without adjustment or regrinding thus reducing machine down time.

Aircraft suppliers also rely heavily on carbide-tipped cutters in machining special steels and nonferrous metals. The carbides' ability to resist abrasion in cutting such toughies is in its heyday on the alloy-happy aircraft. Many components could be machined adequately in no other way.

Rock-drilling bits and other tools used for impact work are swinging to carbides, too. Brazing practice has improved to the point where tip separation is no problem with such tool users. Another new use of carbide tools is in hot extrusion work, including titanium. Carbide cutting tools are being used in the uranium field though details are classified information.

Smooth Future—Although tungsten shortages made carbide tools scarce for a while, there is no current shortage and deliveries are running about one month on most tools. The one exception is heavy dies for use in such applications as drawing brass shell cases where deliveries run 10 to 14 weeks.

Carbide tools are cutting costs and increasing production on some jobs up to 20 times and more. In the age of special materials, closer tolerances and increasing clamor for higher production and lower cost, carbides have found their groove cut out for them.



HEAVY COMPONENTS . . .

One of five huge castings for a 13,200-ton extrusion press at Aluminum Co. of America's Lafayette, Ind., Works, this 107-ton cylinder housing reaches the end of its journey from Dusseldorf, Germany. The housing, which Alcoa says is the largest of its kind in the United States, has a displacement of 2210 cubic feet. The press will make larger and more intricate parts for tomorrow's airplanes

Aircraft Industry: Best Hunting Ground for Subcontractors

THE AIRCRAFT industry is still the best place to look for subcontract work.

Small companies are getting a large slice of aircraft jobs, as government agencies urge planemakers to farm out work on defense orders. A case in point is the awarding of subcontracts for large assemblies by Lockheed Aircraft Corp., Burbank, Calif.

Lockheed says it has boosted subcontracts on large assemblies to a current $255 million, more than half the company's total orders for aircraft parts. On one Lockheed order, the Navy P2V Neptune, other companies are building more than 51 per cent of the plane. Besides nine firms now working on major assemblies, some 400 others supply Lockheed with parts and equipment. Of all these firms, 3000 are classified as small business, says the company.

Among the latest aircraft contracts awarded by the government is the first order for a complete airplane received by Temco Corp. The company will build an undisclosed number of McDonnell Aircraft Corp.'s F3H Demon single-jet fighters for the Navy.

If lack of sufficient defense contracts is one of your procurement problems, check over the table at the bottom of the page. It's a selection of the latest contracts awarded by the government to metalworking firms. Each contract is valued in excess of $250,000.

PRODUCT	CONTRACTOR
Machines, Vertical Crank Press	E. W. Bliss Co., Toledo, O.
Saw Machines, Metal Cutting	DoAll Iowa Co., Cedar Rapids, Iowa
Parts for Electric Arc Welders	Hobart Bros. Co., Troy, O.
Shells, 105 mm	National Pressure Cooker Co., Eau Claire, Wis.
Parts for 81 mm Shells	Heywood Wakefield Co., Gardner, Mass.
Pumps for Aircraft	Bendix Products Div., Bendix Aviation Corp., Detroit
Aircraft Tank Assemblies	Welbilt Stove Co. Inc., Maspeth, N. Y.
Generator Sets	Hobart Bros. Co., Troy, O. D. W. Crau & Sons Inc., Minneapolis
Frequency Meters	Radio City Products Co. Inc., New York
Trucks	International Harvester Co., Chicago
Trucks, ½ Ton	Ford Motor Co., Detroit Fargo Motors Corp., Chrysler Corp., Detroit
Trucks, Fork-Lift, Gas	Clark Equipment Co., Buchanan, Mich.
Trailers, 2 Ton	Linn Coach & Truck Div., Great American Industries Inc., New York
Motor Vehicle Parts	S. J. Corbett Co., Detroit
Cranes, Crawler	Harnischfeger Corp., Milwaukee

Export Licenses Extended

Export licenses bearing second and third-quarter allotments of steel controlled materials will be good until Dec. 31, 1952, and licenses bearing fourth-quarter allotments will be extended to Mar. 31, 1953.

Those extensions will give exporters 30 days to make necessary arrangements after expiration of production and delivery dates for third and fourth quarter orders set up in NPA Direction 16 (STEEL, Aug. 4, p. 67).

Export licenses for steel and tinplate commodities covered by Office of International Trade processing codes STEE and TNPL having an expiration date on or after June 2, 1952, are extended through midnight, Nov. 10, 1952.

Alloys Hit Postwar High

Production of alloy steels topped 10 million tons of ingots and castings and consumption of alloying elements rose to 418 million pounds in 1951, says American Iron & Steel Institute. That's the highest tonnage of alloy steel manufactured since 1944 and is 18 per cent more than the 1950 total.

Higher amounts of chromium, cobalt, columbium, molybdenum, titanium and vanadium were consumed in steelmaking furnaces in 1951 than in any postwar year, too. At the same time, alloy steel production rose more than the consumption of alloying elements, partly through the use of boron. In 1951, 132,000 pounds of boron were used to make 354,000 tons of boron steels.

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administration Services Division, Temporary E Bldg., Washington 25.

Materials Orders

ALLOY SCRAP—Direction 1 to NPA Order M-20 requires persons who generate alloy scrap in their production operations to sort their scrap into groups on the basis of nickel and other alloy content. Aim is to stop loss of low alloy steel scrap. Under the direction, low alloy scrap can be melted only for production of alloy, stainless and low-alloy high strength steel. Mingling of such scrap is prohibited except by melters. Direction 1 was issued on Aug. 14, 1952, and made effective on that date.

PLATINUM SCRAP—Amendment of Aug. 12, 1952, of NPA Order M-54 permits makers of jewelry and other items on the prohibited list to receive from refiners for re-use all platinum reclaimed from their platinum scrap materials. Aim is to give relief to manufacturers who do not have facilities for recovering platinum from their scrap. The amendment was effective Aug. 14, 1952.

ELECTRIC UTILITIES—Amendment of Aug. 15, 1952, of NPA Order M-50 provides full fourth-quarter and advance quarterly allotments of controlled materials for minor requirements of electric utilities. The amendment was effective Aug. 15.

CANS—Amendment of Aug. 15, 1952, of NPA Order M-25 lifts can material specifications and quantity limitations from the use of certain secondary tin plate, terne plate and black plate. The amendment was effective Aug. 15, 1952.

ELECTRIC UTILITIES—Direction 2 to NPA Order M-50 is to bring inventories of steel held by electrical utilities into line with those held by other industries. For the period of Sept. 1 to Dec. 31 no electric utility may accept delivery of any item of steel in controlled material form if its inventory exceeds, or by acceptance of delivery would make it exceed, a 60-day supply. This restriction temporarily takes the place of a 90-day inventory limitation. Direction 2 was issued Aug. 15, 1952, and was effective on that date.

SULPHUR—Amendment of Aug. 19, 1952, of NPA Order M-69 permits users to increase sulphur inventories to a 60-day supply. They have been limited to 25 days. The amendment was effective Aug. 19, 1952.

SULPHURIC ACID — Revocation of NPA Order M-94 on Aug. 18, 1952, removes controls from distribution of sulphuric acid.

RAILROAD EQUIPMENT — Amendment of Aug. 19, 1952, of NPA Order M-95 requires producers of locomotives and railroad industrial and freight cars to report to NPA before the 15th of the first month of each calendar quarter on proposed production and delivery of railroad transportation equipment for the current quarter and the succeeding three quarters. Formerly the order was phrased to require a report covering only a single quarter. The amendment was effective Aug. 19, 1952.

BRASS MILL PRODUCTS—Direction 1 to NPA Order M-82 permits distributors of brass mill products to acquire increased quantities of such products to strengthen their inventories during August and September. The direction was issued on Aug. 20, 1952, and made effective on that date.

Controlled Materials Plan

SMALL ORDERS—Amendment of Direction 3 to CMP Regulation 1 says that smaller orders for carbon steel, copper and aluminum controlled materials need not be reduced below carload quantities, provided users do not order in excess of their authorized allotments. The amendment was issued Aug. 14, 1952, and made effective on that date.

CONVERSION STEEL—Direction 19 to CMP Regulation 1 and Direction 7 to CMP Regulation 6 permits steel users to obtain 500 tons of finished carbon conversion steel per quarter in the fourth quarter of 1952 and the first quarter of 1953 without charging it against their allotments.

EQUIPMENT—Amendment of Direction 4 to CMP Regulation 3 says that machine tools, construction and car equipment, railroad machinery and electronic tubes may no longer be acquired under this direction. In general the direction creates a special preference by which Class A and B products made of steel can be obtained before Dec. 31 by contractors who are working on military, atomic energy and machine tool programs. The amendment was issued on Aug. 20, 1952, and made effective on that date.

NPA Regulation

CANADIAN ASSISTANCE—Amendment of Aug. 20, 1952, of NPA Regulation 3 spells out the right of a U. S. manufacturer to apply for assistance in Canada. It also gives Canadians the right to apply for allocation and emergency directives as well as the usual priority. Canadian companies may use the U. S. rating system only when authorized by the Canadian government. The amendment was effective Aug. 20, 1952.

Price Regulations

EXPERIMENTAL METALS—Amendment 25 of General Overriding Regulation 9 suspends from price control limited sales by producers of experimental metals and metal alloys. Aim is to eliminate burden of establishing ceiling prices for numerous small transactions which have little effect on the stabilization program. The amendment was issued Aug. 15, 1952, and made effective on that date.

EXEMPTIONS—Amendment 33 of the General Ceiling Price Regulation and Amendment 54 of Ceiling Price Regulation 22 lift price control from certain manufacturing establishments doing not more than $25,000 worth of business annually. The amendments were issued Aug. 15, 1952, and made effective on Aug. 20, 1952.

STOVES—Amendment 1 of Supplementary Regulation 30 of Ceiling Price Regulation 22 permits manufacturers of gas and electric cooking stoves who customarily billed their customers on on f.o.b. shipping point basis to henceforth figure their ceiling prices on a delivered basis. The amendment was issued Aug. 15, 1952, and made effective on Aug. 20, 1952.

SHIPBUILDERS—Amendment 24 of General Overriding Regulation 9 suspends price controls from sales or deliveries by a builder of new ships 65 feet and less in length. The amendment was issued Aug. 15, 1952, and made effective on that date.

STEEL—Revision 1 of Supplementary Regulation 100 to the General Ceiling Price Regulation authorizes specified increases in ceiling prices on carbon, alloy and stainless steel. The revision is in accordance with an order from the Office of Defense Mobilization and permits an average increase of $2.36 a ton over the $2.84 increase permitted under the Capehart amendment to the Defense Production Act. Revision 1 was issued Aug. 19, 1952, and made effective on that date.

HEAVY PRESSES

Although this 44,600-pound die block is the largest ever built by Heppenstall Co., Pittsburgh, it will be exceeded by even larger ones to be built as the heavy press program progresses

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Comparative Statistics for Shipping, Ship Construction

	Foreign Flag	U. S. Flag
Passenger-carrying ships in operation	1153	51
Passenger-carrying ships under construction	92	0
Dry cargo ships in operation	7332	1449
Dry cargo ships under construction	846	35
Tankers in operation	1797	424
Tankers under construction	590	31[a]
Current construction costs for a 10,000 deadweight ton dry cargo ship	$280 per dwt	$450 per dwt
Current construction costs, passenger ship	See Note (b) below	
Current operating costs typical 10,000 ton Liberty dry cargo vessel in trans-Atlantic coal trade	$18,000 monthly	$34,000 monthly

NOTE: (a) U. S. yards are also building 27 tankers for foreign registry, which tankers are included in the foreign flag total.
(b) Due to the tremendous divergence in passenger vessel type and the limited construction in recent years in U. S., it is virtually impossible to deal with this item. The SS United States recently completed cost $70.4 million. The construction differential has been settled apparently at somewhere in the neighborhood of 45%, which means it cost almost twice as much to build such a vessel in the United States as abroad. This vessel is 53,000 gross tons if you prefer using a gross ton basis.

Shipbuilding: Becalmed by Contract Changes

IS A CONTRACT a contract when it is a government contract? That is the question which threatens to reduce the rapidly slimming volume of shipbuilding to nil. It was raised when the government sought to renege on its two most important shipbuilding deals.

Under the original contracts, United States Lines Co. was to pay $28 million for the $78 million superliner *United States* with the government floating the rest as subsidy and for national defense considerations. American Export Lines Inc. was to pay $12 million each for the $23.4 million *Constitution* and *Independence.*

Scuttle-"but's" — Under prodding of the comptroller general and a House subcommittee, the shipping companies were startlingly instructed to pay an additional $10 million for the *United States* and an additional $5.5 million each for the *Constitution* and *Independence.* In the case of the *Constitution* and *Independence,* a revised redetermination is to be made by the Federal Maritime Board following a study of shipbuilding costs in Holland while a ruling from the attorney general is awaited in the case of the liner *S.S. United States.*

When the government is involved, nobody knows when the answers will be forthcoming nor what they will be, but it probably will be a long time before a pattern is set which will encourage contract placement for new ships. In the meantime, 13 of the 15 subsidized lines are sitting on some $230 million which they had set aside out of earnings for the construction of new ships and the rest of the world is outbuilding us in ships, erasing the gains which we made during World War II.

Statesman-ships? — What gripes the American industry particularly is that under foreign aid we have contributed some $350 million in the past five years to the upbuilding of foreign flag fleets. That is more than our government has spent on our merchant marine in all the 17 years since the Merchant Marine Act of 1936 became effective.

Interested parties hope that the secretaries of Commerce and Treasury, in compliance with President Truman's request of Aug. 13, will come up with a workable program for ship construction differential subsidies that Congress can enact next year.

Titanium Teases Three . . .

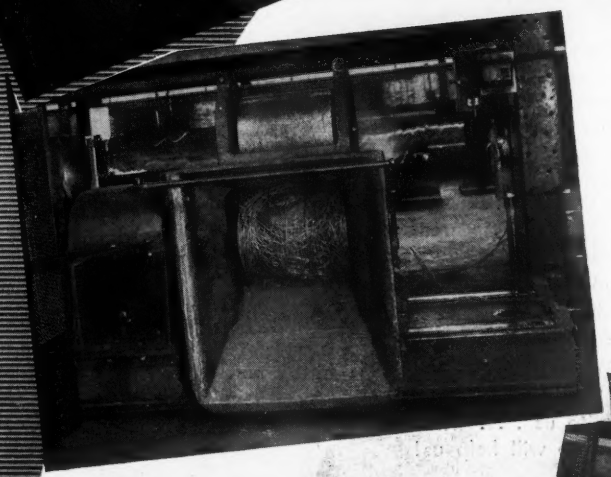
Look for some new names in the titanium industry in the near future. Three companies already well established in the metals field are negotiating contracts with Defense Materials Procurement Administration which would take them into production of titanium —at least in its primary metallic form. (See p. 100)

While DMPA is not giving out details, it is known that research work on new processes is involved and that the raw materials base is to be broadened by the addition of ilmenite to rutile.

Keeping Posted . . .

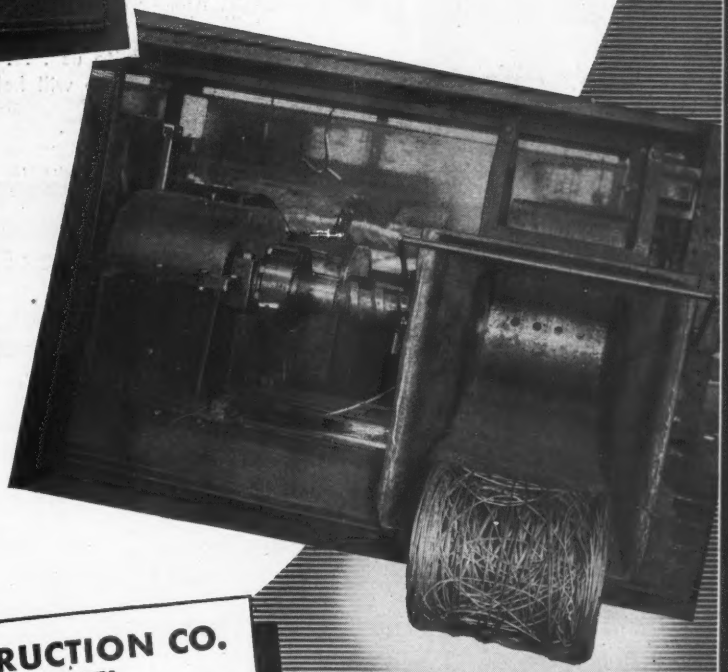
A commercial standard providing specifications for forms, dimensions, weights, finish and industry practices for steel fence posts is available for five cents from the Superintendent of Documents. Entitled "Steel Fence Posts—Field and Line Type (Produced from Hot-Rolled Steel Sections)", the commercial standard CS184-51 was proposed by Rail Steel Bar Assn.

CLEARS COBBLES in a HURRY.



When a red hot bar starts whipping around the mill—everybody ducks. Production comes to a standstill until the cobble is cleared away.

Yes, this happens occasionally . . . even in a Morgan mill. But, Morgan has a special treatment for handling the situation . . . speedily and safely.



At the touch of a button the new Morgan Electric Crop and Cobble Shear begins chopping that part of the cobbled bar still coming through the mill. The sheared lengths drop into the charging box below. At the same time the new Morgan Cobble Bundler quickly winds the balance of the cobble into rolls that can be easily handled and placed in open hearth charging boxes.

Other Morgan innovations that contribute to efficient rolling mill operation will be discussed in future advertisements. If you can't wait, let us tell you about them now. Just write:

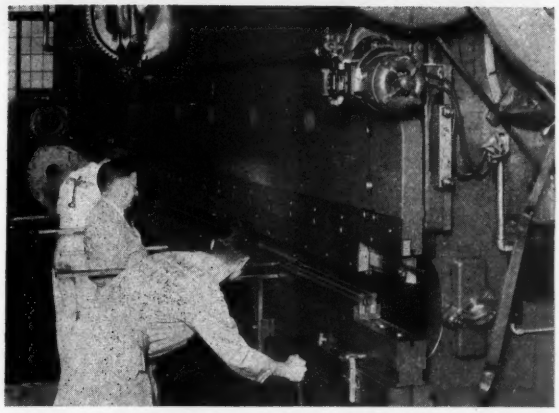
MORGAN CONSTRUCTION CO.
WORCESTER, MASSACHUSETTS

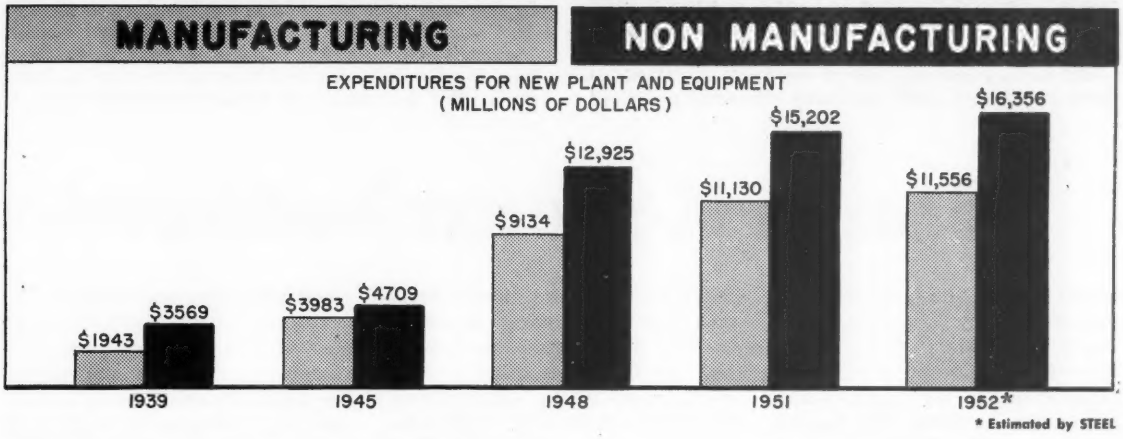
Rolling Mills - Morgoil Bearings - Wire Mills
Regenerative Furnace Control - Gas Producers - Ejectors

English Representative: International Construction Company
56 Kingsway, London, W.C. 2, England

RM-39

The day the wind blew!
How can it happen to us! Our dream house . . . coming apart at the seams . . . disintegrating to the cheap paper from which it was built. Where can we go . . . who will help us!
The sun was bright the day we bought this home. Birds were singing and the soft breeze didn't even ruffle the paper siding. The man who sold it promised it would last a lifetime. It was all so easy . . . so simple . . . and uncomplicated.
Fortunately, most Americans won't buy a house made of paper . . . but many of our countrymen are willing to live in an economy based on paper.
We know it takes more than just money churning the rounds of circulation to make a nation great. We know it requires sound investment . . . real goods . . . high production . . . and unquestioned faith in fellow man. Yet a paper economy is so easy to buy . . . so simple to acquire . . . and even uncomplicated. There are those who will guarantee it for a lifetime!
A financial house constructed of paper will just as surely disintegrate at the first winds of an economic storm as will a house of paper.
If it happens to us . . . where can we go . . . who will help us!
*Cold Wrought Metal Fasteners by
Chandler Products Corp.
1491 Chardon Road • Cleveland 17, Ohio





* Estimated by STEEL

Which Is the Bigger Market?

NONMANUFACTURING capital expenditures continue to hold their historical edge over manufacturing outlays in the current buying binge of new plant and equipment. Nonmanufacturing firms set a stiff $15 billion annual buying rate in 1951 and will better that by probably 6 per cent in 1952.

That means the buyers for nonmanufacturing companies will be in the market to spend about $16,356,432,000 this year with plant and equipment makers.

Some Still Strong—Major area of expansion is in electric power facilities with outlays by mining companies increasing moderately and expected to spurt. Expenditures by other defense-related nonmanufacturing industries have leveled off and the peak was passed in 1951 for nondefense nonmanufacturing activities like trade and service.

A large backlog of capital goods demand at the end of World War II caused a rise in expenditures from under $5 billion in 1945 to $13 billion in 1948 for nonmanufacturing activities. Moderate declines in 1949 were reversed and lapped after the Korean War began and top totals since then reflect materials and construction limitations rather than spending curbs by industry. Capital expenditures of about $85 billion since 1945 are equivalent to more than three-fourths the value of nonmanufacturing gross fixed assets at the end of World War II. Communications, public utilities and nonrail transportation have had the largest postwar expansion, relative to 1945 capital assets.

Joint Effort—A new statistical survey covering these capital outlays has been developed jointly by the Office of Business Economics, Commerce Department and Securities and Exchange Commission. What happened to the totals and classifications is shown in the table below.

That change is roughly equivalent to the new bench mark established for manufacturing industries' capital expenditures inaugurated last December. In both cases, bases for comparison were moved forward to more recent dates and more refined estimating techniques were utilized.

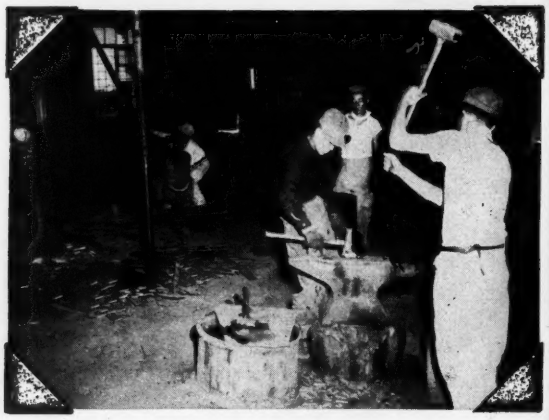
Expenditures on New Plant and Equipment by U. S. Business for Nonmanufacturing Industries*
(Millions of dollars)

OLD METHOD	1939	1945	1948	1951
Mining	380	443	802	796
Transportation:				
Railroads	280	552	1319	1541
Other	280	321	708	511
Utilities	480	630	2683	3577
Commercial & Miscellaneous	1850	1477	5394	5735

NEW METHOD	1939	1945	1948	1951	1952†
Mining	326	383	882	911	1066
Railroads	280	548	1319	1474	1562
Other Transportation	365	574	1285	1492	1581
Communications	302	321	1742	1344	1425
Public Utilities	520	505	2543	3855	4206
Trade	1392	1074	3158	3896	4130
All Others[1]	384	1304	1996	2230	2386

* Data exclude expenditures of agricultural business and outlays charged to current account.
† Estimated by STEEL.
1. Includes service, construction and finance.
Sources: Department of Commerce, Office of Business Economics, the Securities & Exchange Commission.

The Kwan-Sin Aluminum Factory, Seoul (above), is a small aluminum bowl-spinning plant with a working area of less than 400 square feet. Output of bowls is 600 per day and they cost 60 cents apiece. Aluminum comes partly from Japan and partly from scrap generated by the U. S. Air Force. Antiquated French, German and Japanese lathes are scattered around the plant. The flat spring factory (above) is in Seoul, where men form the beveled edge and loop by hand on a large anvil. Flat bar stock of salvaged railroad rails is



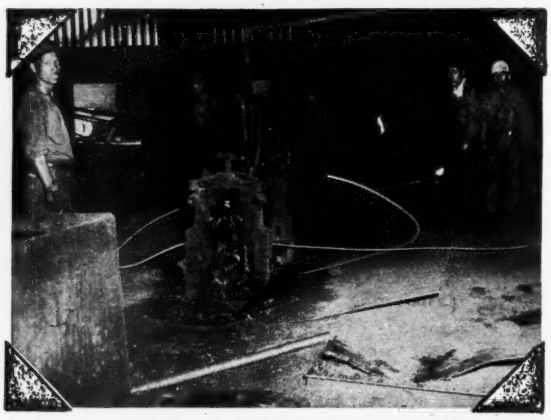
South Korean Industrial S

SPLITTING KOREA at the 38th parallel greatly accentuated the industrial problems of that nation. More than 80 per cent of the heavy industry and 90 per cent of power generation capacity are located north of the artificial boundary. Most of the mineral and nearly all the lumber resources are in the North, too.

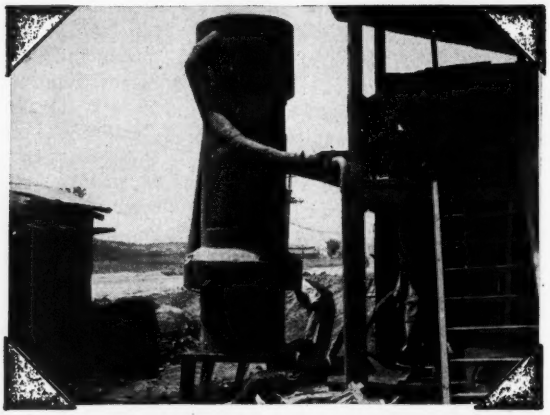
South Korea claims some 300 metalworking plants. These vary from fairly efficient plants employing about 100 men to small three-man plants producing industrial knitting needles from scrap band iron and field wire. Most modern metal plant is the Oriental Can Co., equipped with U. S. machinery under ECA. Oriental produces better than 25 million cans a year on single-shift operation. Large stamping or press equipment is unknown. Welding is rudimentary; electric welding is practically unknown.

Untapped Resources—Mineral resources are confined to some tungsten (currently South Korea's most valuable export), marginal deposits of iron ore and precious metals, and copper in some quantity. Most mines were flooded during the present hostilities, machinery vandalized and power facilities destroyed. Little initiative exists under the circumstances for reopening or developing mining capacities.

With scrap as practically the



Sam-Kang Steel Co., Yong-Dong-Po, Korea (above), employs about 100 men in making nails. Raw material is angle iron and scrap, which is cut into short lengths on an alligator shear, heated in an oil furnace and rolled on a pair of 2-stand, 2-high rolling



mills. The old nail machine came from Japan and puts out nails from 2d to 20d. Their cost: 30 cents a pound. Pyung-Wha Co., Inchon, Korea (right), produces cast iron cooking pots and other utensils. It uses scrap and a poor grade of coke in the melts. Analysis

delivered in 15-foot lengths. U. S. Ordnance used some. Taihan Electric Wire Co., Shi-Hung, Korea (above), produces trolley wire and high tension transmission wire. The complete process of rolling, milling and cold drawing copper ingots is done at this plant.

Taihan Electric Wire Co. (above), has no facilities for producing insulated wire, but Koreans are in the process of rebuilding facilities. While there are few cross-country transmission lines in South Korea, there are some trolley lines in both the cities of Pusan and Seoul.

Scrapbook

only raw material, South Koreans activated and reactivated industrial ventures like a nail factory, a wire drawing plant, an aluminum spinning plant, foundries and an automotive spring factory. Where only a poor quality anthracite coal is being dug in their own country, they have imported bituminous coal from Japan for industrial purposes and are now readying a briquetting process for combining the anthracite and bituminous for use on the railroads.

Clever, These Koreans—The ingenuity and resourcefulness of the South Korean is nowhere better displayed than in his use of a cast-off from the American army—the lowly beer can. These cans currently cost 25 won apiece (6000 won equal $1.00). From them are made buttons, pails, food containers, cooking utensils and roofing sheets. Pails and roofing sheets are closed with lock joints. The roof on the wire drawing plant (upper left) was made through this use of beer cans.

If you could walk through South Korean metalworking plants, as did A. S. Martin, president, King Fifth Wheel Co., Philadelphia, maker of steel rings, when he was Lt. Col. Martin, senior advisor in the American Military Advisory Group to the Republic of Korea, you'd find scenes like those pictured on these pages.

of materials varies much, thus the castings produced are usually of poor quality. No pig iron is used. Foundry cupola in Suwon, Korea (left) is, as usually, made from oil drums. Note the charging platform and charging door. Human energy supplies the power

to lift materials to the platform and charge them by shovel. Jin Hung Machine Shop, Suwon, Korea (above), machines parts for rice milling machines, a necessity in Korea where rice is a staple of the diet. Molten iron is cast in common foundry practice but machining is poor.

The one best way to take radial loads

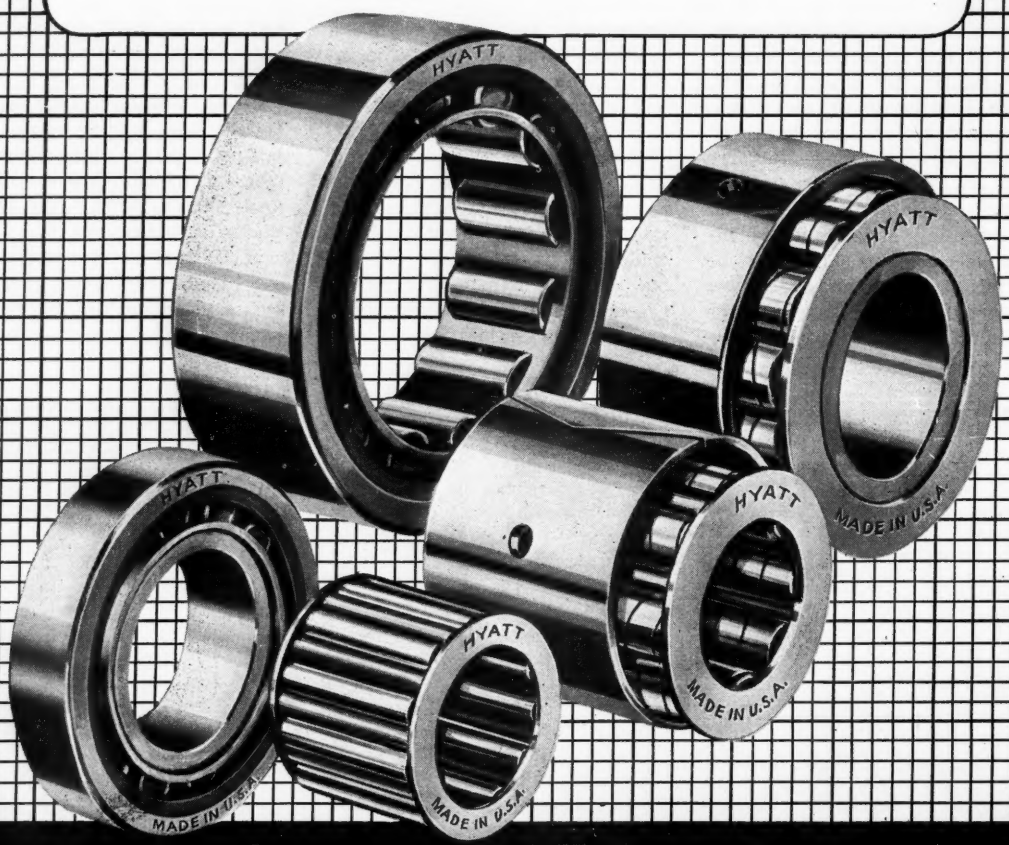
The simplest and most direct way to provide for radial bearing loads is to design with radial bearings.

In a straight cylindrical radial bearing, no radial load-carrying capacity is sacrificed to provide for other conditions. As a result, when you design in radial bearings, you achieve the greatest possible radial load-carrying capacity within given boundary dimensions. More practical design, longer bearing life and simplified assembly procedures usually result.

If the application involves radial loads, design with Hyatt Roller Bearings—the most complete line of radial bearings available anywhere.

* * *

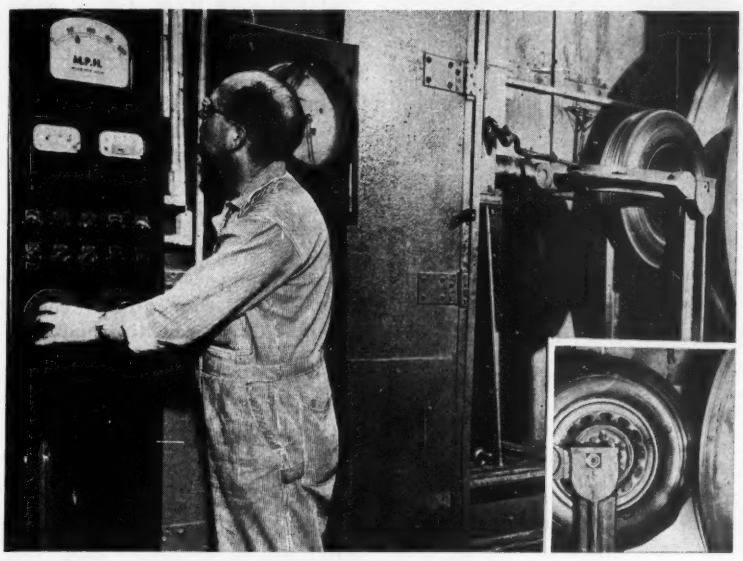
Take advantage of the design flexibility offered by the wide range of sizes and types of bearings in the Hyatt line. If you are not familiar with the complete Hyatt line, write for our general catalog No. 150, Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



HYATT ROLLER BEARINGS

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom



'Round and 'Round They Go—

Tires in the testing rooms of B. F. Goodrich plant in Akron run off 6 million miles a year—20,000 miles each day—without a sign of traffic or even a road. Nevertheless, the tires meet all kinds of road conditions simulated by rotating wheels. A new tire idea may be tested as long as three or four years before the final tire is evolved. The tire at left is undergoing a speed test. When speed reaches 135 mph, three flat spots appear (inset) because the tire pulls away from the simulated road faster than air pressure can restore its original shape. The tire "doctor", right, takes periodic temperature readings. Failure can be expected at about 300° F. Under normal driving conditions, tire temperatures range from 225° to 240° F

Because of conversion's expense and the increased necessity for cost consciousness, automakers may not be able to use more conversion steel even though they're premitted to

DETROIT

BY PUTTING conversion steel into the "ex-quota" class, NPA put up to automotive men one of the hardest decisions they have had to make in recent years. (For more on the order, see p. 64.)

The government agency said, in effect, "You've been after us for a long time to take controls off steel. Now we've partially done it. What are you going to do?"

Question—When conversion steel was used in the past, the automen figured that anything they could do to increase production was economically justified. Car demand was like a bottomless pit, no matter how many units they put into it they couldn't seem to fill it. Suddenly, however, the pit was discovered to be milk-bottle-shaped. The neck filled up rapidly and automen had reason to wish they could cajole their conversion steel sources into cancelling their contracts. Extra-cost steel, particularly in sheet form, was loading up storage yards and warehouses, unwanted by the men who had originally traveled from one end of the country to the other to negotiate for its purchase.

Now, the NPA, after automotive industry urging, says "OK, you do not have to surrender your CMP tickets to buy conversion steel. Only if you want to take more than 40 per cent in excess of your regular quotas in this premium-priced steel are the sellers going to ask you for the chits."

The Catch—There are some big catches to NPA's go-ahead. One of these is of NPA's making. It says that the auto companies are still to be limited to their percent-of-industry production ceilings. An automaker, therefore, cannot decide that by increasing production mightily he may be able to bring down his unit cost enough to cover the extra conversion steel cost. The other factors, also economic, are staring most makers squarely in the eye. The man who is probably Detroit's largest Studebaker dealer summed it up this way—"I'm selling all the cars I get, but I wouldn't want my allotment increased."

Demand for most automobiles is down, down in about the same proportion as automobile production is down. If there is a latent demand which went into hiding when incomes were jeopardized by steel strike, it may be possible to coax it out this year, but the nearness of new model introduction acts against this possibility. Scare buying has been conspicuously ab-

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sent. The used car market, one of the most reliable barometers factory sales chiefs have to go by, has not responded in anything like normal fashion to the possibility of a new car shortage.

Toss-Up—So here the automen are, tossing from one horn of the dilemma to the other. They have now explored the possibilities of conversion steel. They know where to get some, how much they are going to have to pay and that it won't be charged against their CMP allotments. They also know that the prospective buyer is price conscious to a very great extent and not all sure that this is a good time to make a car purchase.

It is extremely unlikely that any automaker will want to take full advantage of NPA's generosity in the matter of conversion steel. But it is also a foregone conclusion that conversion will put many makers on the production comeback trail and permit them to come closer to realizing fourth quarter quotas.

More Overtime for Suppliers

For some suppliers of automotive components and parts the rest of the year will bring back memories of 1950. In the attempt to make up for the more than half a million vehicles which were not produced because of the steel strike, an intensive production drive is ahead of the industry. For a few makers this will mean Saturday and other overtime work. But more feel their costs will not be able to stand this payroll onslaught. The alternative is to boost hourly production, and add workers on straight time rates. One large truck producer is understood to be scheduling operations at the highest daily rate in its history. This rate is to continue through the rest of the year if suppliers can keep it fed.

As greater production is sought while the attempt is made simultaneously to keep costs under strict control (the latter being absolutely mandatory as long as conversion steel must be purchased), the probability of worker grievance looms strongly. It is likely that every increase in output rates will stimulate a charge of "speed-up" and although most automakers are now reconciled to the need to add workers in direct ratio to production as a means of keeping labor peace, a turbulent period, marked by wildcat strikes, is undoubtedly ahead.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,683
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,674	695,898
June	560,952	653,682
July	227,460	522,858
August		571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
July 19	32,442	131,419
July 26	42,514	131,598
Aug. 2	22,148	117,010
Aug. 9	43,964	97,351
Aug. 16	38,295	129,661
Aug. 23	65,000*	139,115

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

To Cut Costs, Not Boost Output

Several makers used their assembly line shutdowns to make changes in manufacturing methods and to install new equipment. Reason for these changes in most cases is to reduce manufacturing costs, not increase output. In spite of union lip-service to the idea of technological progress, and the autoworkers' acceptance of a four-cent-an-hour pay increase every year in return for "a co-operative attitude on the part of all parties in such progress" (the phrase used in current UAW contracts with automakers), some of the newly installed conveyors and machinery are not today in operation. If their motors are turned on the men will walk off the job, plant managers have been told.

Co-operation Pays Off

For some time Chrysler has been searching either for an aluminum foundry or for aluminum foundry equipment to support its tank engine program in the Michaud ordnance plant at New Orleans.

Ford on the other hand had an aluminum foundry at its disposal in what formerly was the Dodge-Chicago plant, where Ford presently is making R-4360 Pratt & Whitney reciprocating aircraft engines and will soon make J-57 P & W jets. This facility was virtually unused, and the equipment was in fact in Ford's way.

Since the Ford operation is under the Air Force, and Chrysler's is under Ordnance, there were some problems connected with transferring the equipment from one's jurisdiction to the other's. But these were solved; Ordnance and Chrysler are now at work removing from Ford's aircraft engine plant in Chicago melting and casting equipment which will soon be used for turning out cylinder heads for tank engines at Michaud.

New Role for Lincoln Plant

Come October, one of the historic automobile assembly plants in Detroit will be an empty shell. This is the Lincoln Motor Car Co. plant at W. Warren and Livernois, built in 1918 and first used for manufacture of Liberty aircraft engines. When Henry Ford bought Lincoln in 1922, the plant had been in production of passenger cars for two years, and when it is abandoned as a manufacturing facility this fall it will have turned out nearly a half million cars.

Lincoln - Mercury's Detroit assembly operation is in progress of being moved to the division's new plant in Wayne, Mich. In full operation, this facility will rank among the largest in the world. Part of it is currently set aside for jet engine parts manufacture.

Cost of the move is set at more than $1 million, it being done piecemeal so that no production is lost. Part of the body shop was the first unit to be set up and first bodies-in-white came off the line two weeks ago. These were trucked back to the old plant for completion. The rest of the body shop, the paint laboratory, quality control lab, maintenance tool room, plant hospital, sheet metal layout inspection department and office furniture and equipment will hit the road in the next two months. L-M divisional offices will be continued at the old plant for an indefinite period.

The bare facts about *Ball Bearings*

1

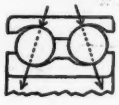
Nothing Rolls Like a Ball. It is nature's favorite, strongest form. Having no ends, it rolls freely in any direction.

2

Its inherent resistance to load is greatly increased by curved raceways which, under load, are partly filled by an arc of the ball. "Point contact" talk is the bunk. Actually, its contact is an ellipse, like this: ⬬

3

This is how a ball resists thrust (axial loads) as well as radial loads—like a bicycle on a banked track.

4 

Put two rows of balls together, and you can support thrust and radial loads from any direction. They may be in one single bearing or in two separate bearings.

5

Unlike other types of rolling elements, the ball need not be forced to travel in the proper direction. Function of separator is merely to keep balls spaced. Contact is in region of poles (point of slowest rotation—least friction.)

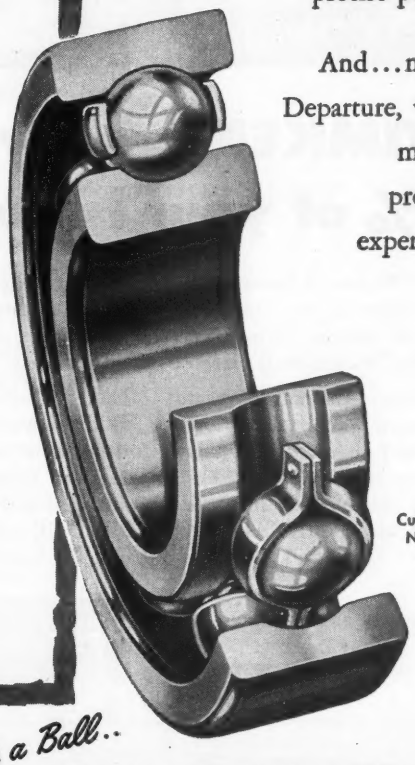
6

Only ball bearings may be self-sealed with integral closures of felt and metal. In average conditions New Departures are lubricated for life. Other type bearings cannot maintain precise "interfitment" needed to maintain efficient self-sealing.

Rugged New Departure Ball Bearings lick friction with free-rolling, tough, forged steel balls.

They welcome today's more exacting requirements of higher speeds, heavier loads and *continued* precise positioning of moving parts.

And...most important of all, New Departure, world's largest ball bearing maker, meets your particular problems with a vast fund of experience and *original thinking.*



Cut-away view of New Departure Ball Bearing

Nothing Rolls Like a Ball..

NEW DEPARTURE

BALL BEARINGS

178

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

DELIVERY NOW FROM MILL STOCK!

52100 TUBING
(101 STOCK SIZES)

A high carbon chrome, direct quenching steel which gives through hardness in moderate sections. Typical uses: aircraft engine parts, slitter knives, bearing races, pump plungers, collets, bushings, spindles, drilling machine quills, mechanical seal rings.

"NICKEL-MOLY" TUBING
(52 STOCK SIZES)

A low carbon nickel-moly carburizing steel which gives high surface hardness with a tough core. Typical uses: piston pins, bearing races, farm equipment and knitting machinery parts, sleeves, bushings, pump plungers, perforating guns.

These two TIMKEN® wear-resistant steels will do 90% of your hollow parts jobs!

NEED steel tubing in a hurry? Within 24 hours we'll ship you warehouse quantities of two Timken® steels that will do 90% of your hollow parts jobs: Timken 52100 steel and Timken "Nickel-Moly" steel.

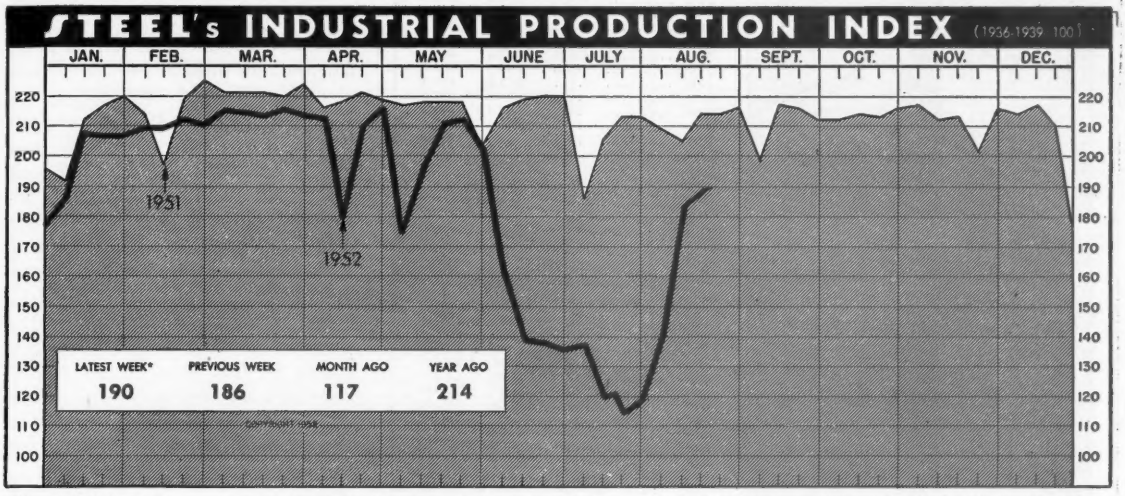
Ask for 52100 if you need a steel that can be heat treated to file hardness and tempered back to any desired point. It's a high carbon steel that has through hardenability in moderate sections. It has high wear resistance and often can be used in place of more expensive steels. Available in 101 sizes from 1″ to 10½″ O.D.

Ask for "Nickel-Moly" if you need high case hardness and a tough core. It's a fine-grained carburizing steel with exceptional stamina and shock absorbing qualities when heat treated. Available in 52 sizes from 1⅜″ to 10¼″ O.D.

With both of these Timken steels you're sure of uniformity from tube to tube and order to order because every step from melt shop to final tube inspection is controlled in the Timken Company's own mills. For the current mill stock list, write The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Aug. 16 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Industrial production index reflects rapid recovery from the steel strike. Price hikes may curb production of civilian durables in the months ahead

INDUSTRY is making rapid strides in its advance toward pre-strike production.

This snapback is reflected in STEEL's industrial activity index, which in the week ended Aug. 16 reached 190 per cent of the 1936-1939 average. This compares with 213 in the week before the start of the steel strike. Steel plants in the week ended Aug. 18 boosted production to 94.5 per cent of rated capacity, only 8 points under output in the week before the strike. Freight car loadings and electric power generation that week shot up over the pre-strike week by 8 and 11 per cent, respectively. Automotive production remained the chief depressant in the index. U. S. and Canadian plants slashed assemblies to a mere 33 per cent of the pre-strike week's turnout, as steel inventories were unable to support increased production. But automotive production is now recovering substantially. All in all, the nation is recuperating from the steel strike faster than many economists formerly dared believe possible.

Speed-Up—Carryover of defense orders for steel is now expected to be cleared away by Sept. 30. Previously it was thought this could not be accomplished before Nov. 30.

This suggests that full production on civilian goods can be resumed earlier than expected. But will it be needed?

Many producers of consumer durables were having a hard time selling their products for some months before the strike. Now that the steel wage settlement is forcing their prices upward, they soon may find selling harder than ever. These companies may again be forced to cut production and lay off workers when inventories are again sufficient in the months following the November elections.

Auto Outlook Cloudy . . .

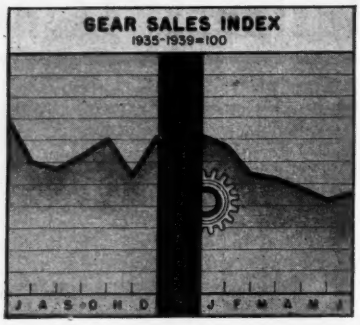
The automotive industry is worried about fourth-quarter production. Producers of autos and trucks are voicing concern over steel supplies for the authorized volume of 1,150,000 passenger cars and 275,000 trucks in October-December, 1952. They are saying that the program is unworkable if the government limits steel allocations to 80 per cent of the steel essential to manufacture these vehicles and restricts buying of conversion and foreign metal. These allocations are particularly unrealistic because of the lack of steel inventory to fall back on during the coming months, say the companies.

So far this year, U. S. producers have slashed output more than 500,000 passenger cars and trucks because of the steel strike, estimates *Ward's Automotive Reports*. Estimated toll is 544,000 units and is based on the assumption that output would have followed the 120,000-unit weekly level had there been no steel tie-up.

In the week ended Aug. 16, U. S. and Canadian plants produced only 38,295 passenger cars and trucks, says *Ward's*. This is a drop of 5669 units from the previous week and less than a third of the output in the same week, 1951, when auto-truck production reached 129,661 units.

Steel Output Nears Normal . . .

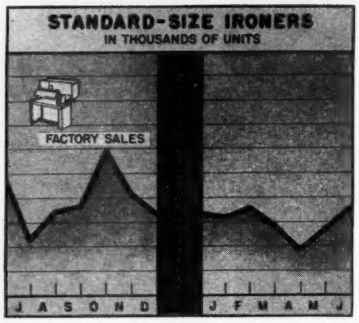
In stepping up production toward the levels attained before the strike, U. S. plants turned out 2,019,000 net tons steel for ingots and castings in the week ended Aug. 23, estimates the American Iron & Steel Institute. In the previous week production was 1,938,000 net tons. In the week before



Gear Sales Index
1935-1939=100

	1952	1951	1950
Jan.	670.6	764.6	280.2
Feb.	539.5	809.1	272.9
Mar.	517.1	830.7	358.4
Apr.	478.7	742.5	328.6
May	425.9	667.1	363.1
June	452.3	800.9	401.0
July	....	589.1	410.7
Aug.	....	564.2	617.4
Sept.	....	630.1	654.5
Oct.	....	703.4	564.8
Nov.	....	530.0	554.9
Dec.	....	716.5	680.4

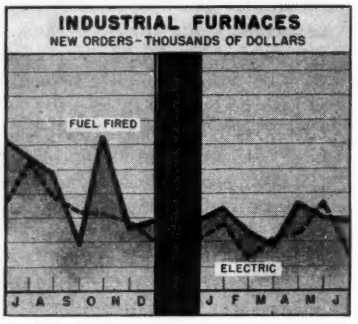
American Gear Mfrs. Assn.



Standard-Size Ironers
Factory Sales—Units

	1952	1951	1950
Jan.	15,636	24,600	20,300
Feb.	17,630	32,400	27,600
Mar.	13,913	34,700	37,800
Apr.	8,938	23,700	31,600
May	12,652	24,200	27,400
June	17,654	24,500	27,100
July	.....	11,100	25,100
Aug.	.....	17,200	42,700
Sept.	.....	18,300	41,400
Oct.	.....	29,800	47,500
Nov.	.....	20,500	41,900
Dec.	.....	16,900	38,800
Total	.....	277,900	409,200

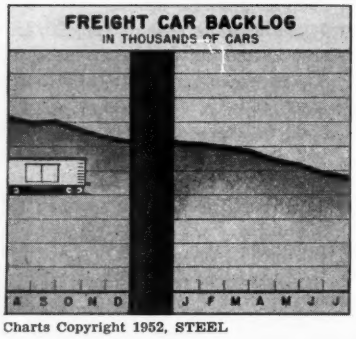
American Home Laundry Mfrs. Assn.



Industrial Furnaces
New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1952	1951	1952	1951
Jan.	3,379	4,033	2,856	2,764
Feb.	2,413	4,670	1,363	3,312
Mar.	1,813	7,019	2,100	4,846
Apr.	3,606	8,497	2,298	3,657
May	3,032	5,044	3,713	4,766
June	2,954	6,259	1,552	3,370
July	....	5,303	....	5,587
Aug.	....	4,850	....	3,891
Sept.	....	1,821	....	3,250
Oct.	....	6,374	....	3,172
Nov.	....	2,516	....	2,882
Dec.	....	2,875	....	2,100

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1952	1951	1952	1951
Jan.	5,334	26,356	120,251	144,758
Feb.	7,358	15,947	118,900	154,861
Mar.	5,619	11,271	115,854	158,619
Apr.	397	6,628	108,270	155,871
May	2,502	4,919	103,910	150,628
June	3,264	6,793	99,615	147,725
July	1,536	2,417	95,265	144,810
Aug.	....	1,828	.....	139,014
Sept.	....	9,657	.....	140,135
Oct.	....	3,464	.....	132,792
Nov.	....	6,752	.....	129,158
Dec.	....	3,309	.....	123,947
Total	....	96,190		

* End of month
American Railway Car Institute

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	July 21	Machine Tools	July 14
Durable Goods	Aug. 18	Malleable Castings	Aug. 11
Employ. Metalwkg.	Aug. 4	Pumps	July 28
Employ., Steel	Apr. 28	Prices, Consumer	Aug. 4
Fab. Struc. Steel	July 21	Prices, Wholesale	Aug. 4
Foundry Equip.	July 21	Radio TV	July 21
Gray Iron Castings	Aug. 11	Refrigerators	July 28
Indus. Production	July 14	Ranges, Elec.	July 28
Ranges Gas	July 28		
Steel Castings	Aug. 11		
Steel Forgings	Aug. 11		
Steel Shipments	June 23		
Vacuum Cleaners	Aug. 18		
Wages, Metalwkg.	Aug. 4		
Washers	Aug. 18		
Water Heaters	Aug. 18		

the strike started, output totaled 2,091,000 net tons.

Construction Activity Plunges...

Figures show that the construction boom has halted, at least temporarily. In the week ended Aug. 14, contract awards for heavy construction dropped 18 per cent below the average 1952 week, reports *Engineering News-Record*. Public housing toppled 89 per cent below the average week, while industrial building was off 50 per cent and private housing awards were 18 per cent under the average 1952 week.

Indicating the suddenness of the drop in housing activity, housing starts in July were at an annual rate of 1,088,000 units, a new record for the month, says the Labor Department. Private housing hit 102,000 units, the first time in almost two years that the 100,000-unit mark was topped.

With the August total down considerably, housing credit curbs will be eased substantially in October, says the Bureau of Labor Statistics. As the annual rate will be below 1.2 million units in the June-July-August period, housing credit curbs cannot continue to require down payment of more than 5 per cent of the sales price after Oct 1.

Vacuum Sales Strong...

Factory sales of vacuum cleaners continued above the year-ago volume in July. Sales of standard-size household units in July totaled 188,715 units, compared with 161,002 in the same month of 1951, says the Vacuum Cleaners Manufacturers' Association. July sales were off 8.8 per cent from 206,939 units sold in the preceding month.

Nonferrous Castings Off...

Shipments of nonferrous castings edged down 5 per cent to 162 million pounds during June, reports the Commerce Department. June castings shipments dropped 18 per cent below June, 1951, while shipments during the first half of 1952 were some 17 per cent below those during the same months last year. The June total consisted of 75 million pounds of copper and copper-base alloy castings, 47 million pounds of aluminum, 34 million

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	94.5	89.0	102.0
Electric Power Distributed (million kwhr)	7,619	7,495	7,164
Bituminous Coal Output (daily av.—1000 tons)	1,600	1,391	1,695
Petroleum Production (daily av.—1000 bbl)	6,300	6,266	6,220
Construction Volume (ENR—millions)	$237.5	$253.2	$214.9
Automobile, Truck Output (Ward's—units)	38,295	43,964	129,661
TRADE			
Freight Car Loadings (unit—1000 cars)	800[1]	782	829
Business Failures (Dun & Bradstreet, number)	141	123	149
Currency in Circulation (millions)[3]	$29,051	$29,041	$27,925
Dept. Store Sales (changes from year ago)[3]	+2%	−2%	−4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$14,265	$16,317	$14,687
Federal Gross Debt (billions)	$263.0	$262.9	$255.9
Bond Volume, NYSE (millions)	$13.4	$15.8	$12.3
Stocks Sales, NYSE (thousands of shares)	5,058	5,506	7,215
Loans and Investments (billions)[4]	$75.7	$76.1	$70.0
United States Gov't. Obligations Held (billions)[4]	$32.6	$33.3	$30.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92	171.92	171.92
STEEL's Nonferrous Metal Price Index[6]	223.2	222.1	224.6
All Commodities[7]	112.0	111.9	115.0
All Commodities Other Than Farm and Foods[7]	112.7	112.7	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

pounds of zinc and 3 million pounds of magnesium and lead die castings. Order backlog at the end of June totaled 248 million pounds, slightly above the May total, but 18 per cent under the order backlogs on June 30, 1951.

Dividend Payments Decline . . .

Manufacturers paid out less in dividends in July than they did in July, 1951, reports the Commerce Department. Cash dividends by manufacturing corporations issuing public reports were down 4 per cent to $199 million in July. Iron and steel companies paid out $20.3 million, compared with $20.6 million in July, last year. Producers of nonferrous metals paid out $5.2 million, compared with $5.5 in July, 1951. Makers of nonelectric machinery paid $23.8 million, compared with $20.9, and electrical machinery companies paid stockholders $28.7 million, compared with $28.4 million in July, 1951.

Tool Orders Increase . . .

New orders for machine tools reached the highest peak in eight months during July, reports the National Machine Tool Builders Association. The association's index rose to 376.4 per cent of the 1945-1947 average in July, compared with 342.9 in June and a reading of 284.6 in May, when new orders dropped to the lowest level in 20 months.

Tool shipments in July declined to the lowest level in seven months to 254.6 per cent of the 1945-1947 average, while the industry's rate of production maintained the new high levels by reaching 338.4 percentage points. At the demonstrated production rate, it would take the industry nearly 13 months to fill the present order backlog, says the association.

Trends Fore and Aft . . .

Business failures totaled 141 in the week ended Aug. 14, compared with 158 casualties in the same week, 1951 . . . Bank clearings dipped 2.9 per cent below the year-ago volume in the week ended Aug. 13 . . . The average urban family income averaged $4300 in 1950, while outgo climbed to $4700 . . . Shipments of fans, blowers and heaters in the first quarter rose 22 per cent over the preceding quarter . . . "The television industry's inventories are now at their lowest point in 18 months," says Ross D. Sirgusa, president, Admiral Corp. . . . Factory shipments of truck-trailers decreased 22 per cent in June.

For Fast Dependable WAREHOUSE SERVICE

Rely on VIKING

- COLD FINISHED BARS—Rounds Hexagons, Flats and Squares
- ALLOY COLD FINISHED BARS
- HOT ROLLED BARS—Rounds Flats and Angles
- STRUCTURALS—Channels Angles and Beams
- HOT ROLLED PLATES
- ABRASION RESISTING PLATE
- HOT ROLLED AND COLD ROLLED SHEETS
- HOT ROLLED STRIP
- YOLOY PRODUCTS—Angles Flats, Plate and Sheets
- DEFORMED REINFORCING BARS
- WELDED WIRE MESH
- SOFT BLACK ANNEALED WIRE
- BRIGHT BASIC WIRE AND WIRE RODS
- WIRE ROPE AND FITTINGS

VIKING STEEL COMPANY
16700 St. Clair Ave.
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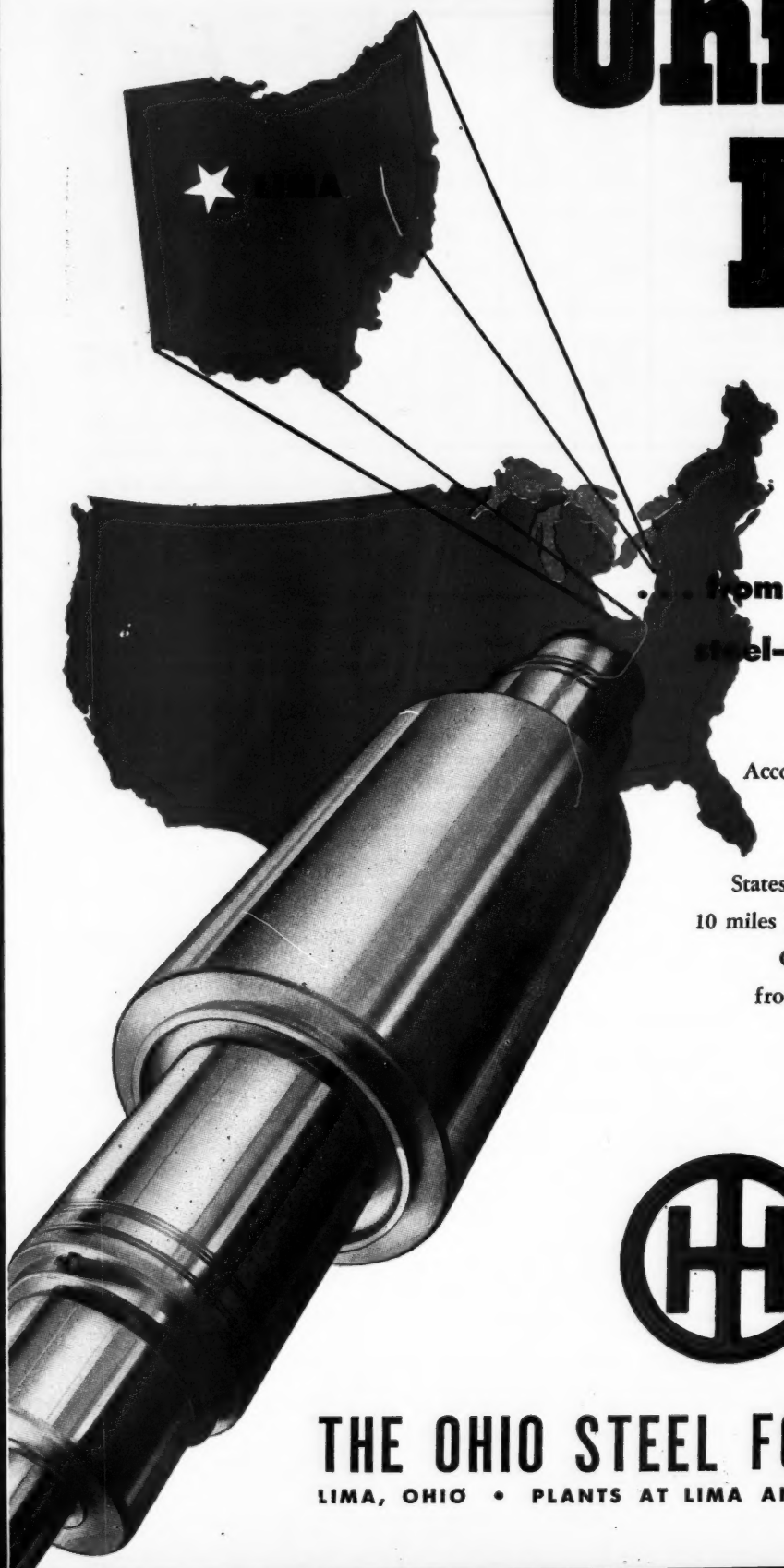
Ohio Rolls



. . . from the center of steel-making production

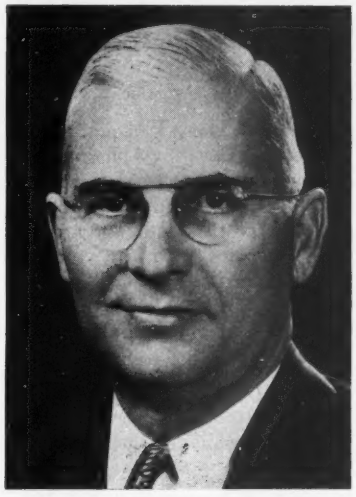
According to the American Iron and Steel Institute, the center of the United States steel-making capacity is just 10 miles North of Lima, at Beaverdam, Ohio. Your Ohio Rolls come from virtually the center of this capacity.

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Men of Industry

JAMES D. YOUNG
. . . heads Yale's Stamford Div.



GLEN McDOWELL
. . . Blaw-Knox division sales mgr.

JOHN A. CORTELLI
. . . V. P. Clark Controller

James D. Young succeeds **A. Charles Amann**, resigned, as general sales manager of the Stamford, Conn., division of **Yale & Towne Mfg. Co.**, directing all sales operations involving Yale's locks and builders' hardware products.

At **Continental Screw Co.**, New Bedford, Mass., **Harvey F. Phipard Jr.** was appointed director of research and engineering, **Edward J. Locke Jr.** as chief engineer, and **George E. Jenney Jr.** as master mechanic.

A. G. Neese, former assistant manager in the Chicago office of **Sharon Steel Corp.**, was appointed Chicago district sales manager succeeding **H. S. Gier**, who resigned.

L. L. Hotsenpiller was appointed director of manufacturing, **National Radiator Co.**, Johnstown, Pa. He succeeds **B. T. Hain**, resigned.

George S. Ford was advanced to manager of purchases for **Soule Steel Co.**, San Francisco.

Leon C. Reed, assistant manager of sales in the railroad, pig iron and chemical division of **Inland Steel Co.**, Chicago, will retire Aug. 31 after 43 years of service. He will be succeeded by **Albert W. McAbee**, sales representative for the division.

Glen McDowell was appointed sales manager of **Lewis Rolls**, a division of Blaw-Knox Co., Pittsburgh, succeeding **J. M. Lewis** who was made assistant to F. H. Allison Jr., assistant vice president in charge of all roll sales.

Don E. Sweeney was made sales manager of the diesel engine plant of **Harnischfeger Corp.**, Crystal Lake, Ill., succeeding **R. H. Fitz**. Mr. Sweeney was formerly associated with General Motors Corp., Detroit.

Paul Chisler is now in charge of manufacturing procedures of the new stainless steel division of **Kenmore Metals Corp.**, Jersey City, N. J. Mr. Chisler has served in executive capacities with Page Steel & Wire Division of American Chain & Cable Co., Monessen, Pa., and Ivy H. Smith Co., Jacksonville, Fla.

Archie M. Naysmith was promoted to general superintendent and plant engineer, **Macwhyte Co.**, Kenosha, Wis. **R. B. Whyte Jr.** will be his assistant.

Howe Scale Co., Rutland, Vt., appointed the following new branch managers: **Donald P. Berne**, Minneapolis; **William J. Tucey**, San Francisco; and **Lierd E. Grant**, Los Angeles.

John A. Cortelli was elected vice president of **Clark Controller Co.**, Cleveland. His duties will be vice president-engineering and chief engineer, having served in the latter capacity since 1946.

William C. Ayres was named manager of materials, **Hotpoint Co.**, Chicago, to succeed **Albert Behnke**, resigned.

Harry D. George was promoted to superintendent of production control, Lukenweld Division, **Lukens Steel Co.**, Coatesville, Pa. He replaces **A. Willard Baker**, on leave of absence because of ill health. **John C. Nelson**, manager of production control, functioning over Lukens and By-Products Steel Co. Division, also will extend his activities to include Lukenweld.

Samuel S. Auchincloss was named executive vice president, **De Walt Inc.**, Lancaster, Pa., subsidiary of American Machine & Foundry Co.

Allan E. Chester was appointed vice president of **Poor & Co.'s** Promat Division, Waukegan, Ill. He succeeds **C. W. Canfield**, resigned. **Rexford K. Roe**, former plant superintendent, was appointed division manager.

Richard T. Voelz and **Truman S. Brown** were appointed field rep-

CHARLES B. EISENHAUER
. . . Houdaille-Hershey mfg. manager

resentatives for the Chicago and Los Angeles sales office, respectively, of **F. J. Stokes Machine Co.**

Charles B. Eisenhauer was appointed manager of manufacturing of **Houdaille-Hershey Corp.**, Detroit, Mich. Mr. Eisenhauer was formerly assistant to the president.

Richard H. Rowland resigned as vice president, industrial division, **Gould-National Batteries Inc.**, Depew, N. Y. He is succeeded by **Frederick W. Roth**, who will have headquarters in the home office at St. Paul.

L. L. Bohan was appointed sales representative in Southern California and Nevada for **Michigan Steel Casting Co.**, Detroit.

Link-Belt Co. appointed **Kendrick M. Hickman** as assistant sales manager of its Ewart plant in Indianapolis and **Carl Rudman** as manager of agricultural sales there. Mr. Hickman assumes the duties of **H. M. Bowman**, transferred to the Chicago Pershing road plant to devote full time to sales promotional activities.

Robert J. Thomas was appointed manager of the newly created secondary products division of the **Tennessee Coal & Iron Division**, United States Steel Corp., Fairfield, Ala. Mr. Thomas was formerly special sales representative in the sheet and wire division.

Harley W. Whitmore was appointed to the newly created post of director of engineering in the Deepfreeze Appliance Division, **Motor Products Corp.**, Detroit.

Clifford S. Vaughn was named assistant western regional manager of **Bellows Co.**, Akron, with headquarters in Los Angeles.

W. S. McChesney was made manager of foil sales for **Aluminum Co. of America**, Pittsburgh, to succeed **T. A. Torrence** who has held that position for the last 24 years and who continues with the company as chief technical consultant on foil sales. Mr. McChesney was assistant district sales manager of Alcoa's New York office.

Clifford R. Palkie joined **United Chromium Inc.**, New York, as assistant sales manager, organic coatings division.

James S. Mumper has joined **Osco Steel Co.**, Cleveland, where he will specialize in steel sheet sales. He has been associated with Jones & Laughlin Steel Corp. in Cleveland for the last 17 years.

Norman Pintchuk has joined **Solar Aircraft Co.'s** San Diego, Calif., plant as foundry metallurgist in its stainless steel foundry.

Superior Steel Corp., Carnegie, Pa., appointed **Paul W. Pheneger** general superintendent of its ordnance clad metal plant. He will supervise the completion and direct operation of the new rolling mill which is being built by Superior and equipped by Army Ordnance. **J. Herbert Morgan** was appointed general purchasing agent.

Raymond L. Morrison Jr. was elected secretary and assistant treasurer, **Morrison & Risman Co. Inc.**, Buffalo.

Fred D. Martin was appointed plant manager of the St. Mary, Pa., manufacturing facilities of **Speer Carbon Co.**

A. C. Cronkrite, since 1937 vice president, central region sales, Chicago, of **Universal Atlas Cement Co.**, has retired. **George S. Neel** was elected vice president, central and western region sales, Chicago, for this U. S. Steel Corp. subsidiary, effective Sept. 1.

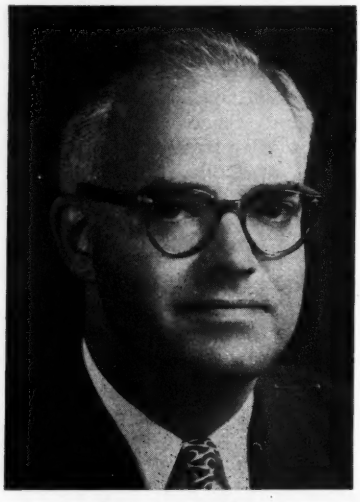
Sheldon Machine Co. Inc., Chicago, appointed **Howard B. Carroll** assistant sales manager.

Tom A. Ellington was appointed manager of the sales promotion department of **Detroit Steel Products Co.**, Detroit. Mr. Ellington was formerly a sales executive of Jam Handy Organization, Detroit.

Harry E. Sloan, president of **Cushman Chuck Co.**, Hartford, Conn., since 1928, was elected chairman of the board of directors.

Thomas W. McKee was named general sales manager, **Case Chemical Co.**, Cleveland.

Albert B. Friedmann was appointed assistant to the sales vice president, **Chicago Vitreous Enamel**



PAUL W. PHENEGER
. . . Superior Steel plant mgr.

J. HERBERT MORGAN
. . . Superior Steel purchasing agent

The Superior Tube That Speeds Up The Race

Furnishing tubing that speeds a customer's production processes is a Superior specialty.

A case in point is illustrated above. The customer, New Hampshire Ball Bearings, Inc., manufactures high-speed, precision ball bearings. They formerly machined the races for certain of their smaller sized bearings from solid stock. This represented a considerable material loss . . . and a substantial time loss in the manufacturing process.

Prime requirements for the races were concentricity within 10% of the race wall thickness, dimensional tolerances under .002" and hardness. After consultation with us the customer began to fabricate these races from 52100 Alloy Steel tubing. Time, material and money were saved and the product improved.

Such savings are almost a commonplace with Superior customers. Because of our long experience in standard production of what is generally regarded as specialty tubing, we can frequently supply a quick and easy solution to the most difficult problems . . . and generally do so without charging "premium" or special handling prices.

If you have a need for fine small tubing in any analyses . . . almost any shape . . . and of a superior quality . . . it will pay you to check with us. We may be able to fill your needs from stocks of our selected distributors in key cities. Write Superior Tube Company, 2005 Germantown Ave., Norristown, Penna.

BE SURE ABOUT TUBING—
SPECIFY **Superior**
THE BIG NAME IN SMALL TUBING

All analyses .010" to 5/8" O.D.
Certain analyses (.035" max. wall) up to 1 3/8" O.D.

ROUND AND SHAPED TUBING

Available in:

Carbon Steels:
A.I.S.I.—C-1008, MT-1010, MT-1015, C-1118, MT-1020, C-1025, C-1035, E-1095

Alloy Steels:
A.I.S.I.—4130, 4132, 4140, 4150, 8630, E-52100

Stainless Steels:
A.I.S.I.—303, 304, 305, 309, 310, 316, 317 321, 347, 403, 410, 420, 430, 446, T-5

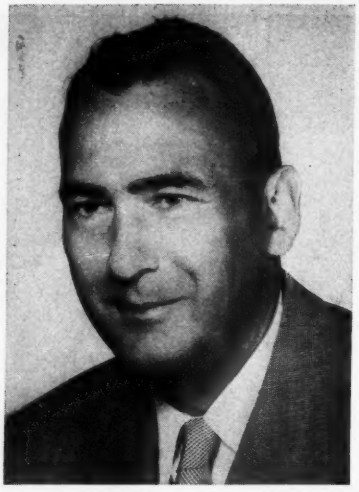
Nickel Alloys:
Nickel, "D Nickel"*, "L Nickel"*, "Monel"*, "K Monel"*, "Inconel"*, 30% Cupro Nickel.

Beryllium Copper

West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. UNderhill 0-1331.

*Reg. U. S. Trademark International Nickel Company

EDWARD F. WHITTEMORE
. . . Detroit purchasing agent, Morse Chain



BENJAMIN C. CARTER
. . . FMC exec. V. P.-machinery div.

LEWIS A. HESTER
. . . B-L-H mgr., locomotive sales

Product Co., Chicago. He continues direction of advertising and sales promotion activities.

Edward F. Whittemore was appointed purchasing agent for the Detroit plant of **Morse Chain Co.**, Detroit, a Borg-Warner industry.

Maurice J. Hammer resigned as general manager, Ward Products Corp., to accept the position as president and general manager, **Great Lakes Aerial Co. Inc.**, Detroit.

W. C. Berg Jr., formerly eastern division sales manager, Laclede Christy Co., joined **Continental Foundry & Machine Co.**, Pittsburgh, as sales engineer.

John A. Clark Jr. joined **Warner & Swasey Co.**, Cleveland, as controller. He was with Tinnerman Products Inc. serving in the same capacity.

Electric Machinery Mfg. Co. appointed **W. R. Shook** as manager of its new southeast district office with headquarters in Atlanta.

Benjamin C. Carter was elected executive vice president, **Food Machinery & Chemical Corp.**, San Jose, Calif., in charge of its machinery divisions. He previously was a vice president and controller. **Ernest Hart**, previously an FMC vice president and president of the Niagara Chemical Division in Middleport, N. Y., was elected executive vice president in charge of the chemical divisions. **Joseph B. Cary**, formerly executive vice president of the corporation, was elected to the newly created office of chairman of the executive committee.

Lee E. Copple was named sales manager, construction and mining equipment department, Sterling Division, **White Motor Co.**, at Milwaukee.

Milton F. Beecher, head of **Norton Co.'s** research and development laboratories since 1941, retires as vice president and director Aug. 31. As chief of these facilities at Worcester, Mass., he will be succeeded by **Wallace L. Howe**, director of research and development.

Lewis A. Hester was appointed manager, locomotive sales, of **Baldwin-Lima-Hamilton Corp.**, Eddystone, Pa. Formerly Mr. Hester was associated with Westinghouse Electric Corp. as manager of its transportation department for the Middle Atlantic district.

Promotions in the manufacturing organization of **Reynolds Metals Co.**, Louisville, and subsidiary, Reynolds Alloys Co., include **George L. Simms** as general manager of both the McCook Sheet Mill in Illinois and Reynolds Alloys Co. at Listerhill, Ala.; **Donald Hipp** promoted to vice president and manager of Reynolds Alloys facilities succeeding the late **M. A. J. Phillips**; and **John E. Larson**, made manager of the McCook facilities succeeding Mr. Simms.

J. I. Gaisford was appointed sales representative for **Fageol Heat Machine Co.**, Detroit. His territory will cover Michigan, Indiana and western Ohio, with headquarters in Huntington, Ind.

OBITUARIES...

Julius E. Shafer, 73, organizer of **Shafer Bearing Corp.**, Downers Grove, Ill., and engineering consultant of the bearing division of **Stephens-Adamson Mfg. Co.**, Aurora, Ill., died Aug. 12.

Carl H. Stewart, 64, retired vice president of **American Zinc Products Co.**, Greencastle, Ind., died Aug. 3 at Saranac Lake, N. Y.

Frederick Beck, vice president, **Quadriga Mfg. Co.**, Chicago, died Aug. 15.

Stanton C. Gunnett, 58, manager, Mac-It Screw Department, **Strong, Carlisle & Hammond Co.**, Cleveland, died Aug. 17.

Allen J. Armstrong, vice president of **The Texas Steel Co.**, Ft. Worth, Tex., died July 25 at Natchez, Miss.

Harry H. Hooker, 58, assistant chief engineer, axle division, **Eaton Mfg. Co.**, Cleveland, died Aug. 4.

There's No Guesswork in the Making of WICKWIRE WIRE

Guessing games can be lots of fun. But not to our engineers and metallurgists. They take a dim view of guesswork of any kind—particularly when it comes to making wire.

Steel for Wickwire Wire comes from our own blast furnaces and open hearths, is made exclusively for wire and wire products; precision drawn and processed in our own modern wire mills.

That way, our engineers and metallurgists maintain constant and careful control over the quality of Wickwire Wire. That way, through precision testing and inspection, they *know for sure* that the Wickwire Wire you buy is always of unvarying uniformity in size, surface, tensile strength and degree of stiffness and ductility.

Whatever your needs in specialty steel wire—high or low carbon steel; round or shaped; in all sizes, tempers, finishes and grades—it will pay you to remember: FOR THE WIRE YOU REQUIRE...CHECK FIRST WITH WICKWIRE.

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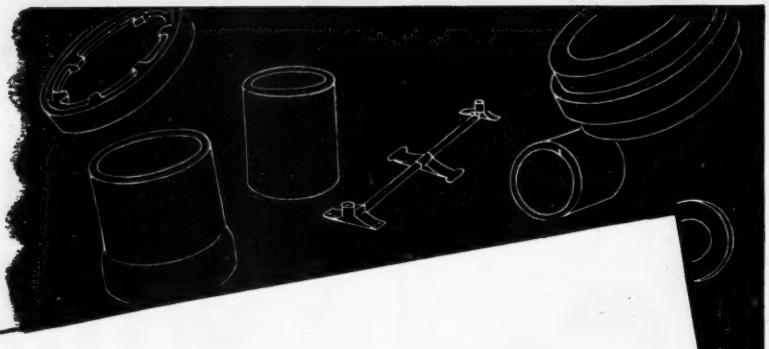

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Production AND Engineering
NEWS AT A GLANCE

PACKAGING COSTS STILL HIGH—It seems there is still plenty of room for improvement in making fast packaging systems more efficient. Speed is so important that packagers often find it more economical to accept losses from overfill than to slow down production. But there is a limit above which the overfill must not go, one that must be controlled by checkweighing. Battelle Memorial Institute says improved methods for processing large quantities of weight data are needed so packaging line operators can make necessary decisions. One answer seems to be automatic statistical quality control systems combined with the advantages of automatic checkweighing. But these need further development to reduce their costs and to simplify their operation.

NO CLEANING, NO FLUX—No special cleaning or abrading preparation and no flux are required in a method of soft soldering sheet aluminum and magnesium directly with 50-50 tin lead, reported by Charles H. Voelker, manager of research and development, Hubeny Bros., Roselle, N. J. Company now is developing a commercial type tool that can be engineered for specific applications.

LIKE THE REAL THING—Coats of arms, emblems and bronze letters of the type you see on banks, commercial and civic buildings are made in Birmingham, England, by a metallized plastic process that takes only a portion of the metal formerly used. They are indistinguishable from the real thing. Where one solid 8-inch letter requires 1 pound of metal, a similar letter made by the new process requires less than ½-ounce of it, and weighs only 5 ounces. The letters are said to be as durable as the old type, but 25 per cent cheaper. Secret of the process lies in the alloying of a microfilm of metal to the base plastic so it can be electroplated by orthodox methods.

BETTER CABLE AT LESS COST—Necessity still is a great impetus behind new developments. The new telephone and telegraph cable developed by the Army Signal Corps, and now used in Korea, may save about $18 million within a year. The new cable lasts longer, costs less to manufacture, carries more traffic. Plastics are used as insulation, and stainless steel as braiding. The cable also is a third lighter than the old type.

"SPIDER" WEBS AID RESEARCHERS—Studying microscopic particles in the atmosphere, technologists of Stanford Research Institute use artificial spider webbing and high-speed air jets. Their objective: To trap minute specks to gain a better understanding of elusive air-borne bits of dust and mist. The webbing used are tenuous fibers made by dissolving resin such as Lucite or Plexiglas. These are arranged over a frame to form a grid. When particles cannot be collected by this method, the technologists collect particles by propelling them onto a plate by a high-speed jet. The latter shoots out the particles at a speed close to the muzzle velocity of a .22 caliber rifle, flattening them against a glass plate. Particles sticking to the plate can be studied under a microscope.

ENGINEER'S "CRYSTAL GLOBE"—Digital solutions now are plotted automatically at the Navy's ordnance lab White Oak, Md. A "teleplotter" does the work. It can plot missile trajectories and compute the path of yaw without the missiles actually being fired. The machine helps engineers plan test programs, reducing their time by some 90 per cent in the interpretation of data. It also tells them whether the formulation of a problem is right, and whether the instruments worked properly during the test. Some 600 electronic tubes are responsible for the machine's answers.

PROP FOR THE JOB—Operators no longer need to look around for a block of wood or steel to prop open a press or die set, or search for a support of the right size for a hold down clamp. An adjustable safety prop made by Lempco Products Inc., Cleveland, meets all of these requirements. The prop consists of a cylindrical ram that is filled with flat steel slugs. When the ram is lifted, the slugs pour out of an opening and fall into the outer cylinder to form a solid mass of steel on which the ram rests. The ram can be returned to original position by turning the prop upside down. It can support a load of 10 tons Lempco says.

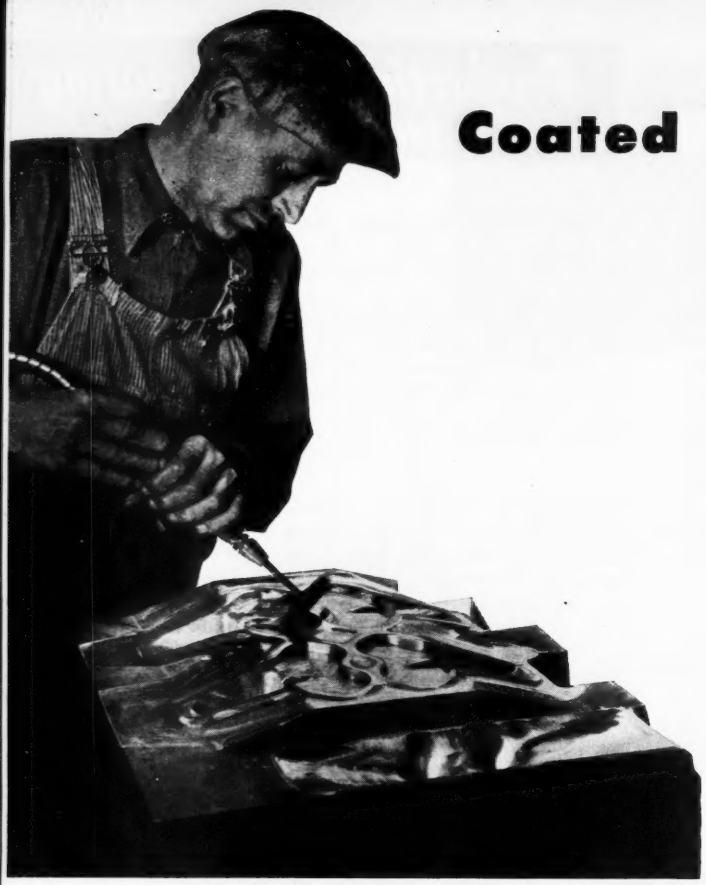
METALWORKINGS—Coated abrasives are fast becoming a major metalworking tool (p. 92). Impressive gains in grinding down metal finishing costs already are being recorded, and applications are still growing . . . A new machining technique is solving a difficult aircraft production problem—that of processing tapered aircraft skins. It generates varying tapers faster than any method known today, and at lower costs (p. 98) . . . Republic now is producing titanium (p. 100). Two of its plants—at Canton and Massillon, O.—are involved . . . Biggest headache in building a giant 401,000-pound stator was transportation. Two years of planning, 2 years of measuring every wheel-roll of the way (p. 102) provided the answer . . . Use of lift trucks helped one plant to literally "pull itself together" (p. 105) in knitting its nonintegrated operations . . . New all-electric furnaces at Timken (p. 110) are expected to better tonnage of existing facilities. Faster melting, charging are principal factors.

Metalworking Outlook—p. 55 *Market Outlook—p. 141*

Coated Abrasives

Grind Down Costs

By ROBERT E. HALL
Pittsburgh Editor



Impressive gains in cost reduction are being recorded for coated abrasives, fast becoming a major metalworking tool. Applications are gaining in number

Abrasive disk attached by a mandrel to the portable drill head easily finishes the intricately contoured surface of the die

GROWTH of metal finishing applications of coated abrasives is one of the most significant developments in modern metalworking.

Twenty years ago, coated abrasives were an unimportant intermediate tool limited mainly to hand finishing operations performed with emery cloth. Machine operations were few, and consisted of minor polishing, finishing, and some grinding.

But if the beginnings were unimpressive, they were nevertheless important. In the early days of coated abrasives in metalworking, one fact became apparent:

Their extended use would depend upon designing machines to use them properly. Therein lies the big story in coated abrasives, the reason why, today, nearly three-fourths of the total coated abrasives manufactured are used in metalworking plants.

Co-operation between machinery manufacturers and producers of coated abrasive products first became important during World War II, and has continued strong ever since. This teamwork has opened the doors to greater production, lower unit costs by taking many polishing and grinding operations out of the "by hand" class.

Educating The User — An obstacle at first, but one that is being overcome, was to show a potential user just how he could benefit by using coated abrasives. This means developing an experimental machine, then taking it to the manufacturer, and letting the facts speak for themselves.

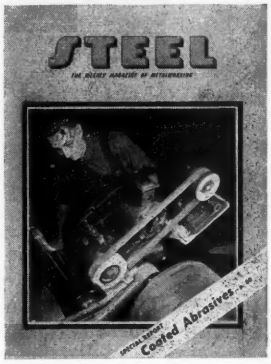
An automotive manufacturer, for example, found costs to produce contoured windshields going sky-high. Big trouble was the need for reconditioning molds after the glass had cooled. This refinishing operation was a costly, time-consuming hand-lapping in which an operator applied various abrasive cloths to remove oxidation and other surface imperfections.

Solution was found in a machine employing a wide coated abrasive belt, backed by a form contoured to fit the mold. The machine performed in minutes the operation that formerly had taken hours. In less than a month, it had paid for itself.

Similar savings are found whereever metal finishing operations have been adapted for coated abrasive belts. Frequently the cost reduction is much higher, as in the case of a steel mill where a strip scouring machine was installed. In this instance, the installation paid for itself in the first day of operation.

Belt For The Job—Coated abrasives manufacturers somewhat half-heartedly express a regret at the machine builders ingenuity. One manufacturer, half in jest said, "They go out and develop a new machine, then we have to produce a belt for the job." Actually

A SPECIAL REPORT



the abrasives manufacturers are as aggressive as the machine builders in developing new uses for their product. The activities of both have benefitted metalworking.

For the manufacturer confronted with the problem of cutting grinding or finishing costs, there is much to be gained by consultation with qualified representatives of either manufacturing group. Both have extensive research facilities. Both have a keen understanding of the problems imposed by new alloys and new products.

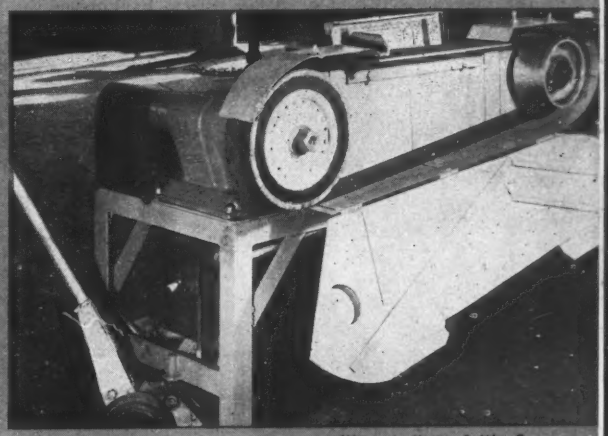
Precision Grinding — Many applications are found in which coated abrasive belts are used for heavy stock removal, and the next step would seem to be precision grinding. A broad program of experimentation is being carried on at the present time by coated abrasives manufacturers and machine builders, with that ultimate goal in mind.

Armour & Co.
Coated Abrasives Division

Milwaukee Stamping Co., Milwaukee, uses a lathe converted to backstand coated abrasive operation for polishing phonograph record changers. Production was increased 25 per cent and the finish was reported better for painting

Armour & Co.
Coated Abrasives Division

Murray Metal Polishing Co., Milwaukee, is polishing hydraulic slider forks for Harley-Davidson motorcycles on a coated abrasive backstand machine. Overall production increase is set at 28 per cent; on flat work, 35 per cent

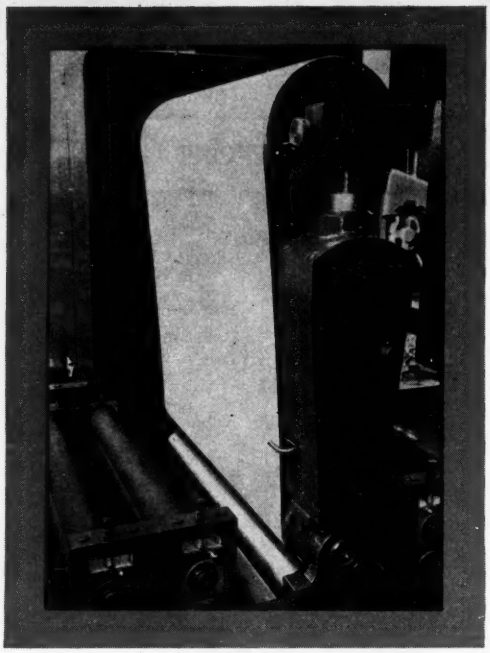


Minnesota Mining & Mfg. Co.

Portland General Electric Co. polishes copper bus bars with a Ryman Engineering heavy-duty bench idler and lathe. The unit produces as many bus bars in 30 minutes as were finished formerly by one man with a file in 6 to 7 hours

A SPECIAL REPORT

Coated Abrasives



Hill 48-inch two-roll vertical abrasive belt pinch roll grinding and polishing machine can be used in series for progressive finishing of stainless steel sheet

Many obstacles militating against precision grinding work are overcome, and the dream may become reality in the not too distant future. One reason why grinding to close tolerances has not been feasible with a coated abrasive belt has been the fact that the belt must be joined. Joints have been overlapped, then subjected to pressure so that the thickness at the lap closely approaches that of the rest of the belt.

Now edges of the belt at the joint are being butted. In this development may rest a great future for coated abrasives. Variation in thickness at the butted edge can be held to under 0.001-inch. This plus the new development of Carborundum Co. which uses a nuclear gaging system to control the abrasive coating thickness (STEEL June 9, 1952) will go far to lick the problem of joint variation.

High Speed—Of the many advantages inherent in coated abrasive belts, not the least of these is the high speed at which they may be run. High speed is possible because belts are cool-cutting. While the abrasive surface cuts deep into the metal, little heat is generated at point of contact because the heat is dissipated over the length of the belt. It is this factor which makes possible dry grinding at a high rate of speed.

An aluminum oxide coated abrasive belt traveling at a speed of 6000 surface feet per minute has surprising performance endurance. It can grind off 9 inches from a ½-inch diameter carbon steel bar in just 60 seconds. And this task does not exhaust the stock removal capacities of the belt. For some types of work, speed can go as high as 10,000 surface feet per minute, and often higher.

Belt speed depends on the type of finish desired, the metal being finished, the type of mineral grain, backing of the belt and the contact wheel behind it. Each factor depends upon and influences the others. Thus two manufacturers may achieve the same finish on a given piece of metal by using different belt speeds and abrasive coatings. But one may have a higher cost per piece and greater rate of belt replacement because his method is not the correct one.

Successful use of coated abrasives depends on the correct combination of speeds, grits, and contacts for a given piece of metal. Each example of high cost reduction through use of coated abrasives has resulted from careful study by coated abrasives engineers and not by trial and error.

Electrostatic Coating—Secret of coated abrasives ability to cut deep and at great speeds lies in the method of applying the abrasive grits to the primary adhesive coating on the backing material. It is done electrostatically. This method is superior to the gravity method of coating in which the grain drops from a hopper onto an adhesive covered sheet.

The grains are charged in an electrostatic field which gives each end of a grain an opposite charge. A negative electrode attracts the positive end of the grain and repels the negative end causing it to be literally pulled into the adhesive coating. Electrostatic coat-

Soft, compress contact wheel conforms abrasive belt to the contoured surface of a plumbing fixture to achieve a satisfactory high polish

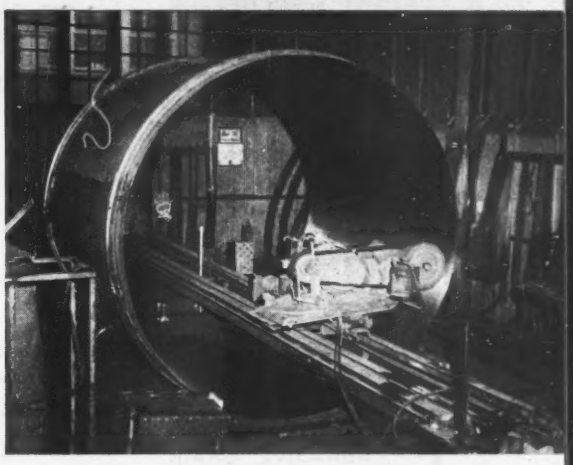
ing provides an abrasive surface that has a high percentage of sharp upright points and a dispersion of grain particles that is more uniform.

Backstand Idler—Probably more than any other single development in the industry, the backstand idler is the key to the widespread growth of coated abrasive applications in metalworking plants. A relatively simple mechanism, a wheel mounted on a tensioning device, it permits the economical conversion of standard grinding lathes for operation with coated abrasive belts.

The idler should be positioned behind the lathe in order to provide proper belt trackage at point of contact with the work.

Proper position of the idler permits the belt to operate at maximum efficiency and results in greater belt life. An adjustable mounting bracket for the idler is recommended especially where a machine is used for grinding or polishing a variety of pieces. The bracket allows complete flexibility in positioning the idler—on the floors, walls or ceiling to best fill the requirements of a particular operation.

Where a greater length of belt travel is needed, usually for grinding and polishing tough alloys, a second idler may be used positioned at angles to the first. Advantages of a longer belt are coolness of operation and longer life for the abrasive surface.



Damrow Bros., Fond du Lac, Wis., uses a Ryman lathe and backstand for interior grinding and finishing of a 10-foot diameter tank, 16 feet long. Time of finishing was pared from 2 days to the current 4-hour rate

Minnesota Mining & Mfg. Co.

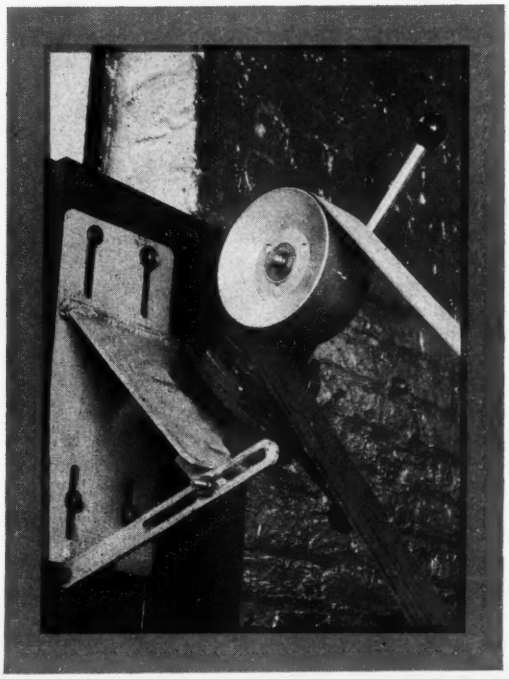
Cutting Contours—Coated abrasives are unmatched for finishing contoured surfaces, a fact that has enabled them to take a prominent place in the current jet engine program. Abrasive belts have been found the best and only way to finish the hard-to-get-at fillet areas of jet blades and buckets.

A prominent development in contour polishing has been the scalloped edge belt. Though developed primarily for the finishing of jet blades, its principle might well be extended to other types of difficult contour finishing.

Contact!—Whether it's contour finishing, or polishing and stock removal from straight plane areas, a lot depends upon the contact wheel that drives and backs up the abrasive belt. The proper wheel spells longer belt life. Recently, a development was reported in contact wheels, a serrated rubber wheel that causes a controlled breakdown of the adhesive bond on the belt. Idea of serrations in itself is not new, but wide spacing and narrowness of the lands is. Increased belt life and cutting rates and reduced belt glazing are the principal advantages.

Another advance in contact wheels is the design of Chicago Rubber Co. This wheel consists of a split universal aluminum hub both sides of which are joined by set screws, and replaceable rubber tires. Wheel has several advantages. When replacement is necessary, only the tire need be replaced. It also offers economy in that only an assortment of tires having a variety of surfaces is necessary to do a full range of grinding and polishing operations.

For polishing deep contours, a contoured contact wheel behind a shaped coated abrasive belt will do a job in seconds that formerly was considered impossible. For other types of polishing, a compressed canvas contact wheel allows a belt to conform to an outside contoured surface when pressure is applied.

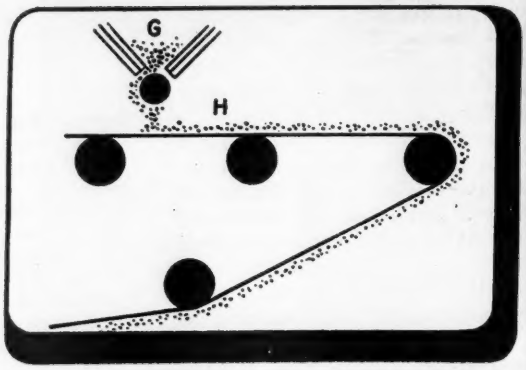


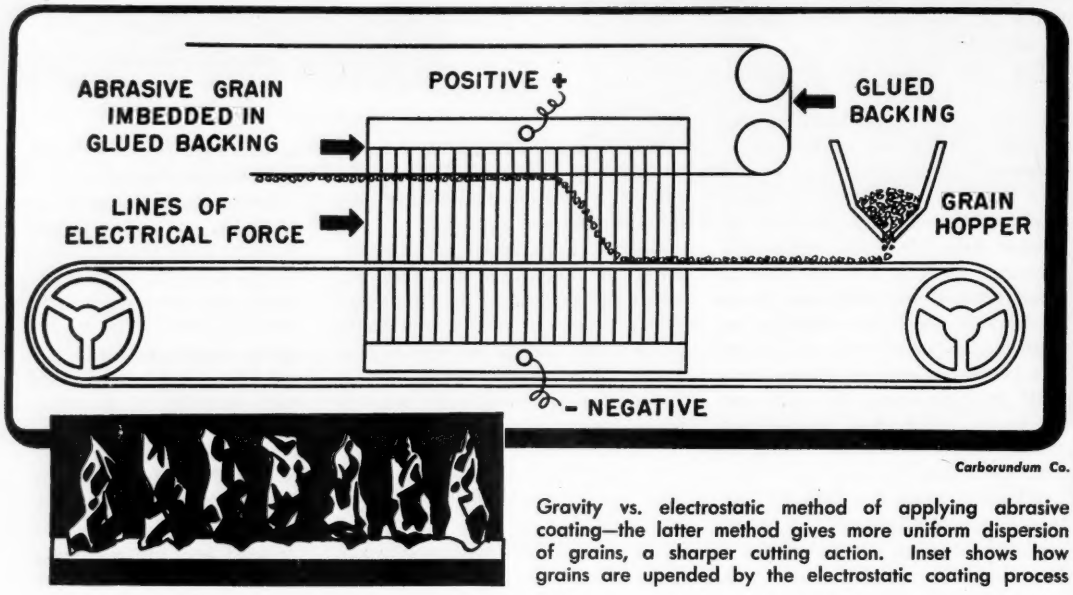
Backstand idler and bracket in wall mounting position. Backstand allows easy conversion of a standard floor lathe into an abrasive belt polisher and grinder

Behr-Manning Corp.

A SPECIAL REPORT

Coated Abrasives





Carborundum Co.

Gravity vs. electrostatic method of applying abrasive coating—the latter method gives more uniform dispersion of grains, a sharper cutting action. Inset shows how grains are upended by the electrostatic coating process

Special Shapes, Special Jobs—To stop with belts when talking about coated abrasive belts would be to tell only part of the story. A host of metalworking operations is performed by special shapes. Usually these are used for deburring and polishing of small inside diameters.

Slotted coated abrasive disks remove burrs, sharp edges and produce a radius to meet strict specifications. Used back to back, they will do front edges, interior and back edges of a hole in one pass. For odd-shaped areas, a tapered fitting made of spiralled coated abrasive material will get into the narrowest part. For polishing channels, fillets and getting into corners, rolls of abrasive cloth cylinders can be obtained to fit a threaded pilot or slotted mandrel.

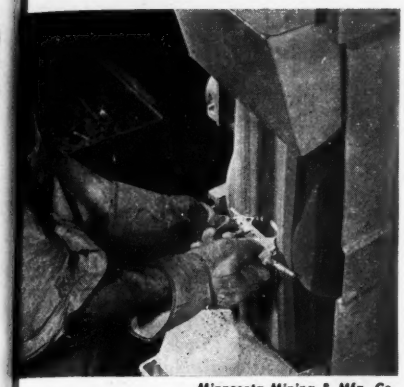
Chamfered edges of holes can be deburred and polished by coated abrasive cones. Cones will also finish edges of varying radii. Most portable power tools can easily be adapted for these various coated abrasive fittings.

More Ideas—Another interesting coated abrasive product is a narrow strip of cloth spirally wound to form an abrasive cord often referred to as a smoke hole cleaner. It can be threaded through holes to remove burrs and polish edges otherwise inaccessible. The abrasive spiral eliminates the risk of scoring the sides of holes. This might occur if a flat strip of cloth were used.

Also finding wide general use is a disk applied to a flexible mushroom-shaped medium soft rubber pad. This coated abrasive will shape and polish such areas as are found in drawing dies, in convex or flat surfaces.

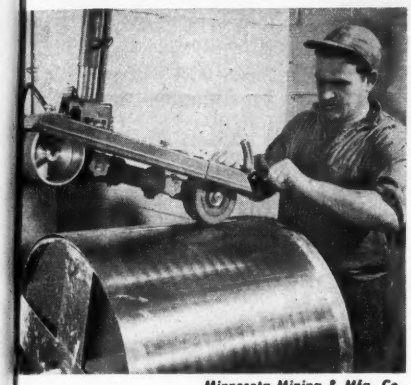
Bringing the stability and nonchattering qualities of a large abrasive belt machine is a new attachment designed to fit almost any portable horizontal grinder. It will grind and polish without chatter and has the advantage of maneuverability. Simple in design, it consists of a contact wheel for a small abrasive belt and a small idler wheel.

What Grit To Use—Of interest to metalworking are three types of coated abrasive; silicon carbide, aluminum oxide and emery. Hardest and sharpest abrasive surface is provided by grits of silicon carbide. Bluish black in appearance, its principal use is in finishing low tensile metals such as cast iron,



Minnesota Mining & Mfg. Co.

Stevens Arms Co. employs a Porter-Cable belt grinder with contoured contact wheel for grinding and polishing trigger guards. Old method: 135 pieces per hour; now: 185 pieces



Minnesota Mining & Mfg. Co.

Pako Mfg. Co., Minneapolis, uses a Newton swing grinder, operating at 5650 sfpm, for removing weld head on seamless 14-gage cold rolled steel photoprint driers. The firm says it does the job in 50 per cent less time

Minnesota Mining & Mfg. Co.

Toro Mfg. Co., Minneapolis, operates a Blount 5-hp lathe, Toro backstand, Torit dust collector for beveling cutting edge of chrome-molybdenum bed knife for fairway gang mowers. Cost per knife was reduced 50 per cent, price written off in 60 days

BELT PERFORMANCE WITH VARIOUS CONTACT WHEELS

Belts: 14-ft x 4-inch No. 80 paper belts

Belt Speed: 7350 sfpm

Stock: SAE 1015-T descaled hot-rolled steel

Contact Wheel	Rate of Stock Removal, g/min, after 1 min	4 min	12 min	24 min	30 min	40 min	60 min	80 min	Total Stock Removed g	Belt Life contact-minutes aver. work max	aver. work	heat-sensitive work
No. 50 Durometer, Plain	90	60	34	..	..	..	..	..	724	16	13	10
No. 50 Durometer ½ x ⅝-inch serrations	75	66	42	17	..	..	..	..	1030	24	20	13
No. 70 Durometer ½ x ⅝-inch serrations	80	65	47	24	22	..	..	..	1413	30	24	16
No. 60 Durometer, R 52	89	61	44	26	21	..	..	..	1355	34	24	13
No. 60 Durometer, R 51	76	53	43	38	30	19	..	..	1571	40	36	22
No. 70 Durometer "61"	75	66	53	48	50	40	31	25	3221	80	66	38

Effect of various serrations in a rubber contact wheel upon belt life and rate of stock removal is shown in this comparative table, published by Carborundum Co., pointing up need for using the right wheel

aluminum, brass and copper.

Aluminum oxide, like silicon carbide a manufactured abrasive, is tough and durable and characterized by the long life of its cutting edges and points. It is brown in appearance. It is well adapted to finishing high tensile metals like alloy steels, high carbon steel and tough bronzes. Emery is the only natural abrasive of interest to metalworking.

Grain sizes are classified on a standard screen mesh basis in accordance values set up by the Bureau of Standards. These are rigidly adhered to by all manufacturers in industry, assuring the consumer abrasive performance of uniform quality.

Coupling Line Cataloged

Publication of its latest engineering catalog describing its line of all-metal flexible couplings for power transmission is announced by Thomas Flexible Coupling Co., Warren, Pa. Couplings are grouped and indexed under six major sections to gain quick reference. These include units for light loads, motor and turbine drives, engine and motor drives, single type for angular misalignment, floating shaft and a section for special design.

Keyway data and standards for straight and tapered bores are included for each group. The final section, covering special designs, shows several units made for specific purposes, with photographs of typical installations.

Wide range of horsepower and speeds cover applications from small motor couplings to large industrial uses, plus main drives on diesel locomotives and ships. All employ the firm's design principle embodying adequate capacity for misalignment and free end float.

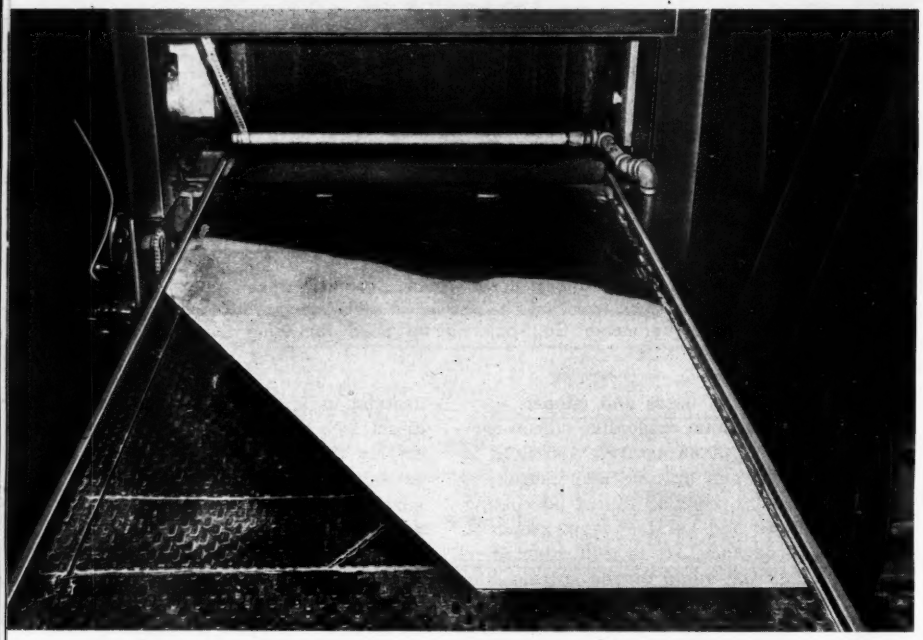
Safety Men To Hear Top Ideas

An effort to get across ideas that actually work for reducing accidents in metalworking plants will be pursued by the National Safety Council at its National Congress & Exposition. The council plans to have representatives of the top firm in each of seven sections in its metals safety contest spend 5 minutes describing their best safety idea during the past year.

Another feature of the metals session will be a symposium. "High Spots in Revere's Safety Program," led by executives of Revere Copper & Brass Inc., Waterbury, Conn. Congress sessions will run from Monday through Tuhrsday, Oct. 24-25, at the Conrad Hilton Hotel in Chicago. Plans for the final day show separate meetings for foundry, steel plant, fabricating and warehousing, and nonferrous industries.

Diffraction Study Scheduled

North American Philips Co. Inc. reports the fall session of its semi-annual x-ray diffraction school is scheduled Oct. 6-10 at its Mt. Vernon, N. Y., plant. Basic subjects to be covered include new high and low temperature camera techniques, fluorescence analysis, Geiger-counter x-ray spectrometer and electron microscopy and diffraction.



Closeup of aluminum plate tapered on Hill Acme wide belt machine using coated abrasive as the machining medium. Floor to floor time is 15 minutes and belt can be changed in 40 seconds without requiring any special close adjustment

Tapered Aircraft Skins Machined

Solution to a difficult aircraft production problem is offered by applying a new machining technique. Lower cost, speed and better finishes are advantages

EXPANDING applications of coated abrasives will force many metalworking production men to revise their concepts of this machining medium. It is no longer accurate to think of this technique as merely a finishing and polishing method.

Latest development in the field finds coated abrasive belts used for tapering aircraft skins. Jointly announced by Carborundum Co., Niagara Falls, N. Y., and Bell Aircraft Corp., Buffalo, this method offers production men a solution to a problem that has plagued them in direct ratio to constant demands by designers for lighter and more intricate wing and tail sections.

Field Broadened—Lack of sufficiently economical production methods for tapering skins has imposed some restrictions on preliminary aircraft design. The new method may be an answer to the fear expressed by wing specialists who state that present methods could not cope with anticipated wartime requirements.

Process involves using a Hill Acme wide belt machine to which certain modifications have been made. Using a wide abrasive belt in conjunction with a "61" rubber-faced contact roll of carborundum, cuts up to 0.1-inch deep can be taken over the entire width of aluminum sheets up to 72 inches wide. Moreover, the equally important subsequent operation of polishing the aluminum sections can be handled on the same machine through a simple change of the 36-grit abrasive belt to a finer 150-grit belt, thus further reducing over-all production time.

The new process, tested thoroughly with the help of Bell production men, showed that varying tapers can be generated easily with this abrasive belt method and that finished skins can be produced at a considerably faster rate than heretofore. Secret of the faster stock removal rate lies in the millions of cutting edges in the form of abrasive grains being presented to the entire width and surface of the sheet. Mill fly cutters can operate on only a 12 to 14-inch (maximum 24 to 28 inches using two heads) section of the sheet at one time.

Sure Grip—Quick, accurate and steady holding of the sheet is assured through the use of a vacuum chuck. Operator training is no great problem—one good machinist and helper can do all that is required after a few days training. Since the relatively inexpensive

abrasive belts are discarded when worn out, no cutting tool maintenance is required, thus any necessity for cutting tool balancing and sharpening is eliminated. There is no time-consuming operation required for setting the belt in position to cut.

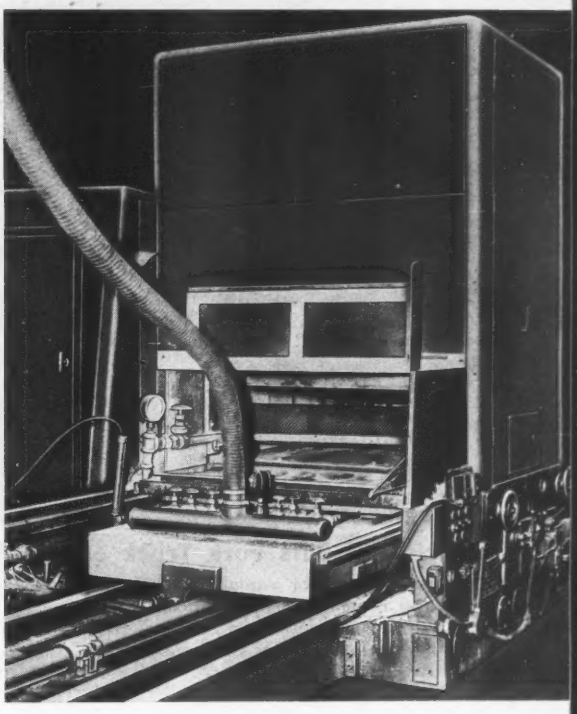
As in other machining methods, the ground chips from the abrasive method are salvagable and have the same scrap value. The capital investment required for the abrasive belt machines is lower than for machines utilizing existing methods. A belt machine, incorporating all the features and modifications which are the result of Carborundum's and Bell's development work can be delivered in eight to nine months, with additional units available every six to eight weeks thereafter.

Smooth Finishes — Precision in the manufacture of aircraft parts is a well-known headache. With the abrasive belt method, tolerances are achieved at plus or minus 0.005 inch. These tolerances are easily realized and can probably be bettered. Microfinishes as low as 10 rms are achieved with fine grit belts, whereas present methods leave a microscopic step condition which must be polished out by hand.

Abrasive belt method keeps the work temperature below 100° F, hence no metallurgical changes take place in the material. Perhaps most important of all, under actual test conditions, abrasive costs were found to be from twelve to fifteen cents per pound of aluminum removed — lower than known costs for present methods. Under production conditions, there is every reason to believe that costs of the new method can be further reduced.

Few Solutions — Many methods have been tried in the past in order to lick this all-important aircraft production problem. But with one exception, none has proved economically practical to date. The rolling of tapered skins, for example, is limited by width and condition of the sheet. Gang-milling of integrally stiffened sections is both wasteful and time-consuming.

Two other methods seem to offer some hope in the future—rolling integrally-ribbed sheets and extruding and forging integrally stiffened sections. For the moment, skin-milling is the only practical method available to manufacturers.



Wide belt abrasive machine modified for producing tapered aircraft skins. Motor is replaced by 250 hp unit and frame is strengthened. Shims under table provide a proper taper to the skin

There are problems even here, both practical and economic. Since the skin-mill fly cutter is only twelve to fourteen inches in diameter, and since at best only two heads may be employed at the same time, the practical width of cut across the sheet is limited. The carbide-tipped cutting tools of the skin mills must be resharpened freqently, and must then be balanced in a circular head and ground to within plus or minus 5 grams, otherwise excessive chatter will develop due to the high velocity of the cutter head. Such balancing and sharpening is obviously an expensive operation and requires the use of special machines.

Effect of Rake on Milling

Results of research on influence of rake angle on metal cutting performance when using high speed steel cutters show high rake angles advantageous in some cases.

Paper is presented by Cincinnati Milling Machine Co., Cincinnati. Complete with pictures, charts and formulas, the report tells of test procedure, observations and conclusions.

One observation is that with high rake angles, tool life increases at high speeds and suffers at low speeds. Report explains that size of the built-up edge decreases with an increase in speed or rake. Thus, with the large built-up edge existing at low cutting speed, the fragile tooth form makes them fail rapidly.

Movie Shows Alco Story

"The Alco Story," an industrial movie based on development and manufacture of products for the oil, chemical and power industries has been released by American Locomotive Co. for its Alco Products Division, Dunkirk, N. Y. The 15-minute, 16mm, black and white film describes how products are developed, emphasizing co-ordination necessary among facilities and manpower to gain efficient production.

One sequence illustrates evolution of new manufacturing techniques used in production of nickel plated pipe for the Atomic Energy Commission.

Attachment Puts Fork Truck on the Spot

When tractors are not available at a loading dock to spot semitrailers, costly delays can result. A simple attachment designed to slip over the forks of a lift truck has been developed by Clark Equipment Co., Battle Creek, Mich., to prevent these loading lags. A cross member with a 3-inch hole in the center serves as the engaging plate. Device is used on 6000 and 10,000-pound trucks

Republic Produces Titanium, Alloys

Production still limited and under strict government allocation. Development work being done on chromium-iron and manganese alloys to broaden field of use

PRODUCTION of titanium and titanium alloys at its Canton and Massillon, O., plants is announced by Republic Steel Corp. The nation's third largest steelmaker is the largest steel company to announce it is working on the new metals.

Titanium, only 56 per cent as heavy as alloy steel, compares in strength. This weight advantage, together with its corrosion resistance, makes it especially desirable for use in the aircraft and other industries where both strength and lightness of metals are desired.

In many cases titanium equals or exceeds stainless steel in its ability to resist corrosion.

Natural Step—Being the largest producer of alloy and stainless steels the latest step was a logical one for the company to take. The processing and rolling of titanium and titanium alloys, aside from melting, is similar to that of alloy and stainless steels. Thus it is expected the company's research, metallurgical and production personnel may be expected to contribute substantially to the development and production of the new metals in commercial quantities.

Company has supplied titanium and titanium alloys in ingot, sheet, plate, strip, bar and wire forms during the last two years for aircraft and other defense programs. Production is still limited and under strict government allocation.

Slow Start—It was discovered in 1791 by William Gregor, an Englishman. However, titanium remained essentially undeveloped until about 1940, when the necessary technological advancements became available for semicommercial production. A spongy form of titanium which is 99.5 per cent pure is produced by chemical processes. (Republic is now buying the titanium sponge, having no plans at present for making the product.) This raw material is then melted in special furnaces and the ingots forged or rolled into various forms.

More Coming—Titanium is melted by the company at its plant in Canton by both the arc and induction methods. Several small furnaces are in experimental production and plans call for installing additional melting and processing equipment.

Induction melting is carried out in a very dense grade of graphite under an atmosphere of inert gas—either argon or helium. In arc melting, specially prepared sponge is fed continuously into a water cooled copper crucible under an inert gas atmosphere and melted with a direct current graphite, tungsten or other type electrode. Of the two melting methods, indications are that the arc melted product would find most widespread application.

Alloy content of titanium alloys probably will not exceed 15 per cent, with most high strength grades running between 4 and 10 per cent. Included among the alloys are iron, chromium, manganese, aluminum and many others.

Development Areas—Major production is confined to the commercially pure product, but Republic is doing considerable development work on the chromium-iron and manganese alloys. Other alloys can be modified to give variations in properties so that a fairly wide range of physical properties is possible.

All of the common machining operations may be performed on titanium although some difficulties remain to be solved. Commercially pure titanium can be spot welded, seam welded or inert gas welded to itself. Welding of alloy grades by conventional methods has not been too successful, but indications are that hot pressure or flash welding may prove satisfactory. Titanium has been successfully brazed to itself and to other metals.

In a book titled, "Republic Titanium and Titanium Alloys," used to announce its entry into the field, the company says, "While an excellent core of information on titanium has been established, the technology is dynamic. Additional information on fabrication, welding, heat treating, etc. becomes available each day which supplements previous data."

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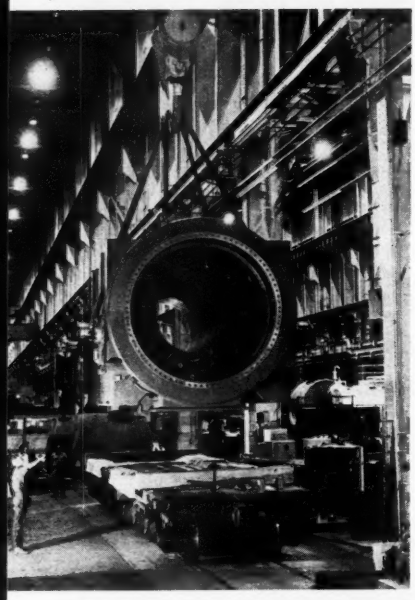
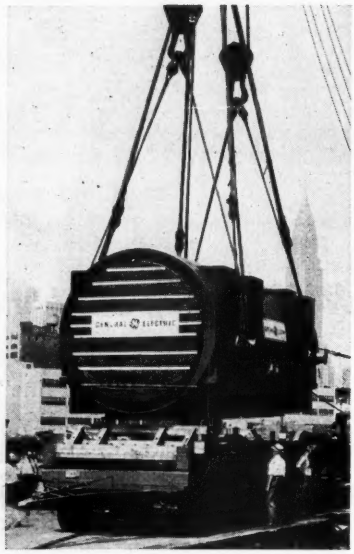
HANDLING DOESN'T END IN THE PLANT

What happens when industry turns out a product too large, too heavy to ship via usual channels? Here's what GE did; food for thought on shipping methods



1 GIANT stator is lowered onto a 500,300-pound capacity flatcar. Two roads were used because its dimensions made direct travel impossible



3 STATOR is loaded onto a trailer at 32nd St. and East river. A dolly, or extra rear end, bolsters trailer for its trip through New York

2 IN SPITE of 300 tons ballast, decks of the floating derrick *Monarch* were almost awash ferrying her huge load around lower Manhattan

4 TRACTOR-TRAILER turns into East river station where only 15 minutes maneuvering, aided by painted lines on pavement ended the city trip

DESIGN and engineering problems were not the only ones that had to be solved in building a giant 30-foot, 401,000-pound stator for one of the world's largest generators in Consolidated Edison's East River station in New York.

The headaches were many.

Transportation was one of the largest encountered by General Electric. This really was a materials handling problem of great magnitude, far greater than the in-plant system that helped create the huge component.

The problem: To get the king-size stator from GE's turbine plant in Schenectady, N. Y., to Consolidated's East river station.

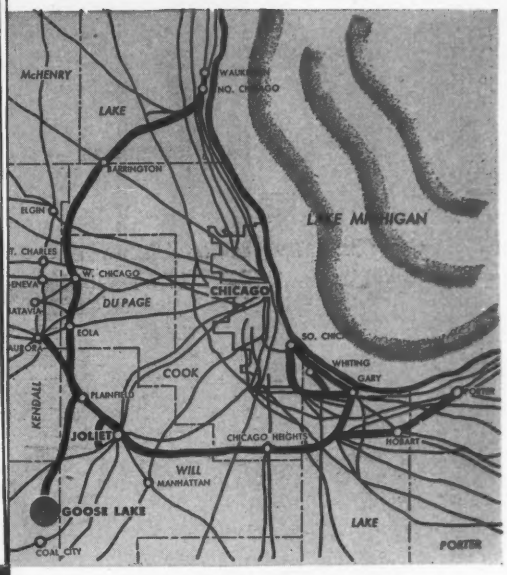
Chief complication: A "package" which, when loaded on a flat car, stood 17 feet, 1 inch above the surface of the rails, and measured 12 feet, 7 inches wide — one that could not clear the tunnels and rock cuts of a direct rail line to New York.

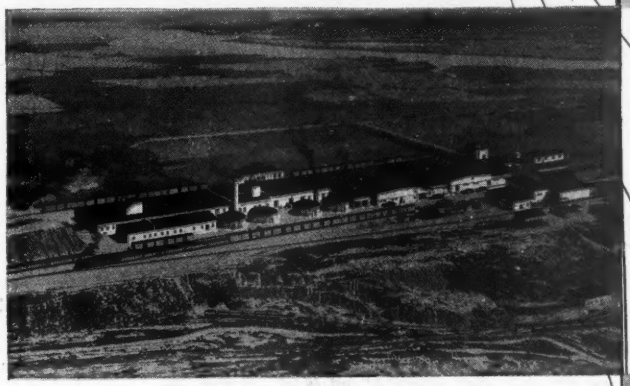
What It Took — To solve the problem—it took 2 years of planning: Two years of measuring every wheel-roll of the way: Two years of time on the part of engineers, shipping and transportation experts in:

- ▲ Lining up special rail, truck and waterway equipment to carry the monster.
- ▲ Figuring out the rail journey and a special truck route through the city of New York.
- ▲ Estimating movement timing on two railroads so the stator could be moved only when all adjacent tracks were clear during the 2-day trip.

The climax was reached following a "dry run," and the stator was delivered without incident, despite clearances which in some cases were less than 1 inch and loads within a few hundred pounds of rated capacity. Accompanying photos show dramatic moments of the real run.

ILLINOIS CLAY PRODUCTS HAS ALL 3





1 Central Location

The Illinois Clay Products Company, Goose Lake Plant, is located near Joliet, Illinois—only 55 miles from Chicago. Above is a map showing the excellent shipping facilities provided by the Elgin, Joliet & Eastern Railway—the Outer Belt Line.

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HIGH TEMPERATURE VERMICULITE INSULATION

Illinois Clay Products Company

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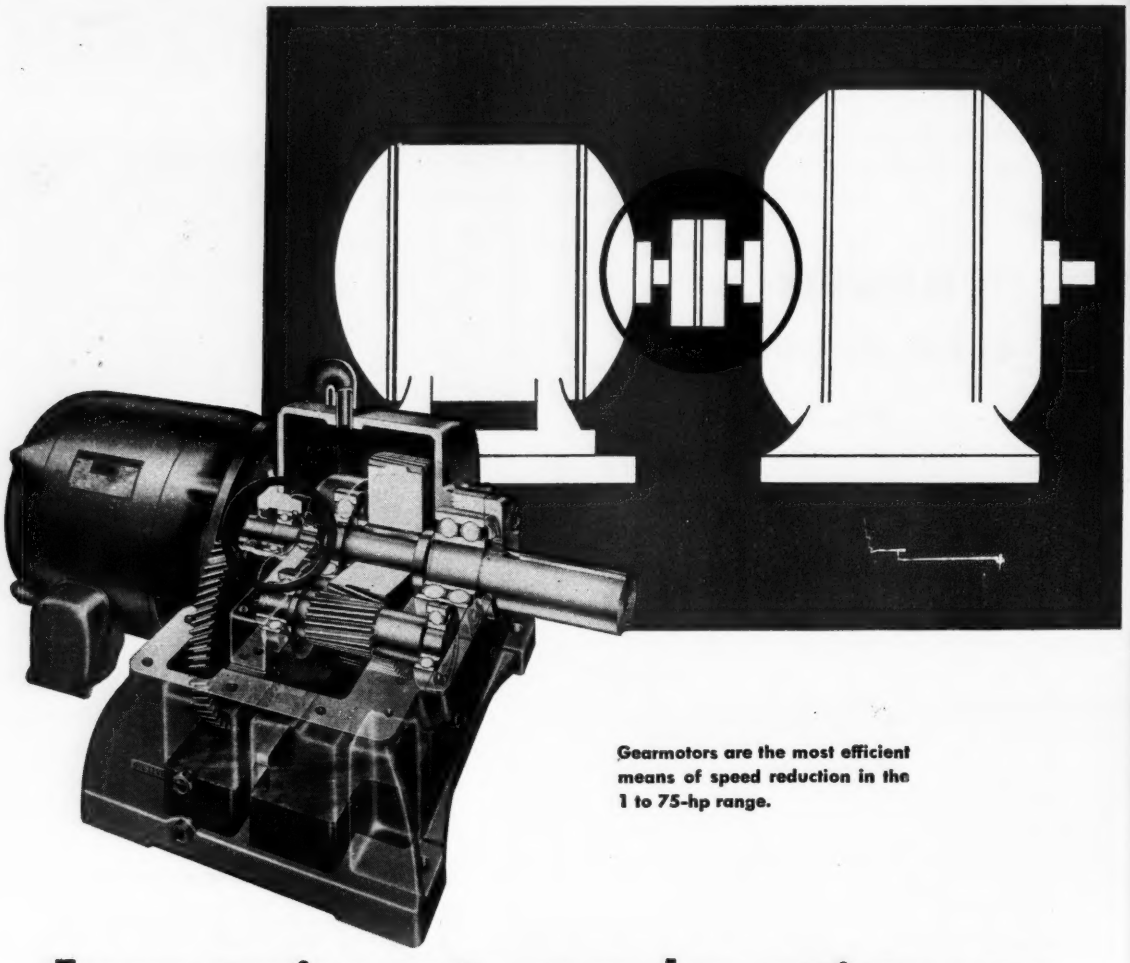

Gearmotors are the most efficient means of speed reduction in the 1 to 75-hp range.

Fewer moving parts mean less maintenance with Life-Line GEARMOTORS

Gearmotors have fewer moving parts than any other form of parallel-shaft speed reduction. There are fewer parts to wear out—to break—to get out of adjustment—to require servicing.

You get this simplicity of design with Life-Line Gearmotors. Input helical pinion is mounted directly on the motor shaft. No intricate coupling to wear—no misaligned shafts to cause breakdown—fewer bearings. The motor and gears are built as one integral unit.

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Ask your Westinghouse representative about all the Life-Line Gearmotor features. See why it pays to specify Westinghouse for your speed reduction needs. Westinghouse Electric Corporation, P, O. Box 868, Pittsburgh 30, Pa. J-07311

YOU CAN BE SURE...IF IT'S Westinghouse

Life-Line GEARMOTORS

This LT-90 operates 24 hours a day transporting billets from outdoor storage to saw in the rod mill. Loading end of the saw is seen here. Billets ride down rail to saw table.

Lift Trucks Knit Nonintegrated Plant

Expanded beyond the fondest dreams of their designers, many metalworking plants are materials handling nightmares. Here's how one plant "pulls itself together"

AS PRODUCTION demands increase, many plants, who like Topsy "jes grew," are viewing their methods of materials handling in an effort to move more materials faster. Problem is often complicated by a diversity of manufacture that cannot be adapted to an integrated materials handling system throughout the plant. What to do about handling a variety of materials in and about a group of nonintegrated departments was solved at Bridgeport Brass Co., Bridgeport, Conn., by a fleet of gas-powered trucks.

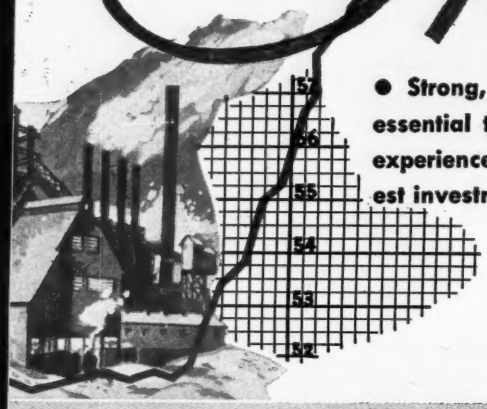
Receipt, storage, briquetting, weighing and batching for melting scrap is handled by seven Towmotors, which also handle pure metal received in another location. Enclosed siding in the metal room accommodates four freight cars. Ties are decked over to allow road trucks to use the platform.

Present metal shortages eliminate need for storage of materials in receiving or shipping. Normally scrap storage is accommodated in the metal room and is handled by five cranes in two bays.

Buckets for Scrap—Two of the lift trucks in this department are equipped with buckets for handling loose scrap such as shell cases. A car is unloaded by three men, including operator. One man sweeps platform clear of dropped cases, the other shovels car floor clear. By previous methods this car took four men 24 hours, shovelling the scrap through a chute on the platform into buckets for crane handling. Current time necessary for unloading is 6 hours.

A unit loaded car of 100,000 pounds of zinc ingots can be unloaded and stored 100 to 200 feet away in 25 minutes with Towmotor and operator alone. A loose load can be unloaded and stored by

Helping · BOOST



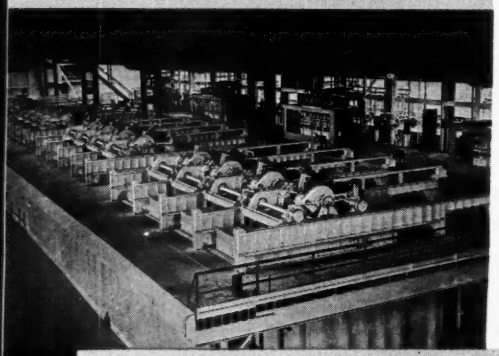
● **Strong, solvent steel companies in the hands of competitive industry are essential to America's prosperity and growth. Over a quarter century's experience has demonstrated that 'Surface' equipment is one of the soundest investments steel mills can make.**

● **MANY STEEL MILLS** will credit a growing list of Surface Combustion equipment with helping to improve production this year, and in the years to come.

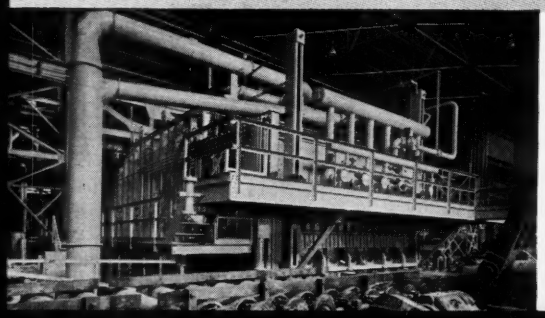
● **FIRST TO INTRODUCE** the venturi jet pump recuperative system, 'Surface' made the initial installation at a leading Ohio Valley steel plant in 1948. This system provides the optimum combination of thermal recuperation and precise ratio control. These jet pumps have since helped increase capacity and reduce costs in many other new soaking pit installations in America's leading steel mills.

● **SURFACE COMBUSTION EQUIPMENT**—with an unmatched record for operating and maintenance economies—has proved a most effective tool for steel mills in their continuous struggle to provide higher standards of production and quality. Some of the furnace equipment is shown here. Perhaps 'Surface' can help you, too.

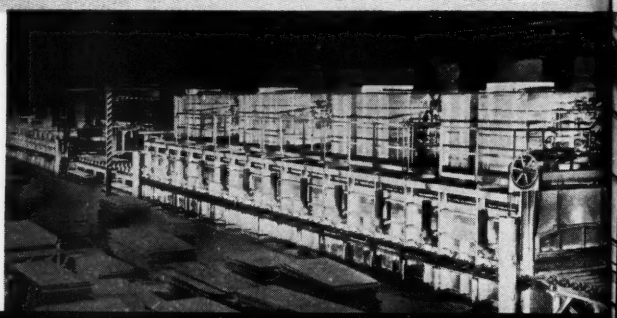
One-way fired soaking pits.



Slab heating furnaces.



Continuous armor plate heat treating furnaces.



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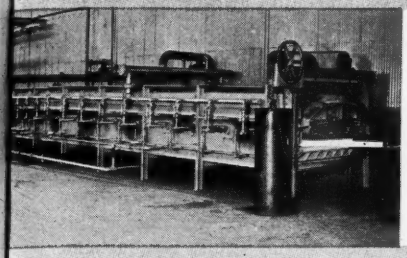
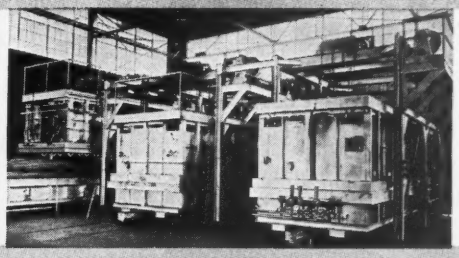
'Surface' A GREAT PRODUCTION NAME IN THE STEEL INDUSTRY

STEEL MILL PRODUCTION
in the critical 50's

Wire patenting furnaces.

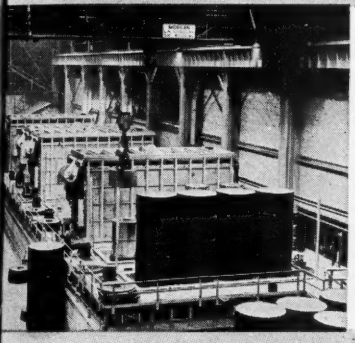


Batch type carbon correction annealing furnaces.

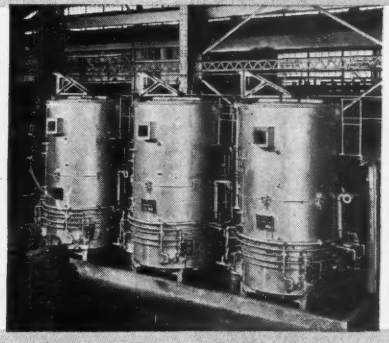


Continuous bright annealing and normalizing furnaces for tubing.

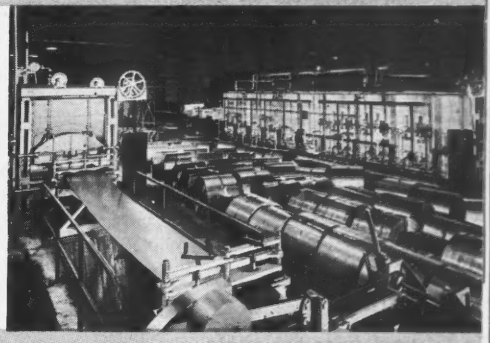
ntrolled atmosphere coil annealing covers.



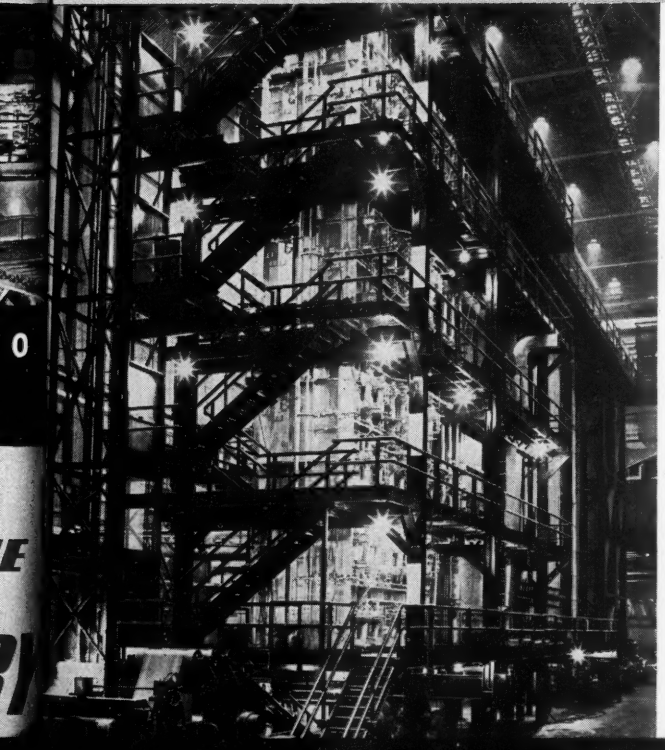
Pit type convection furnaces for rod annealing.



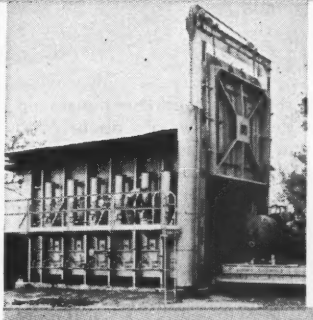
Continuous strip annealing and normalizing furnaces.



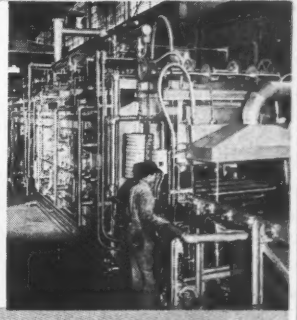
Continuous vertical strip annealers.



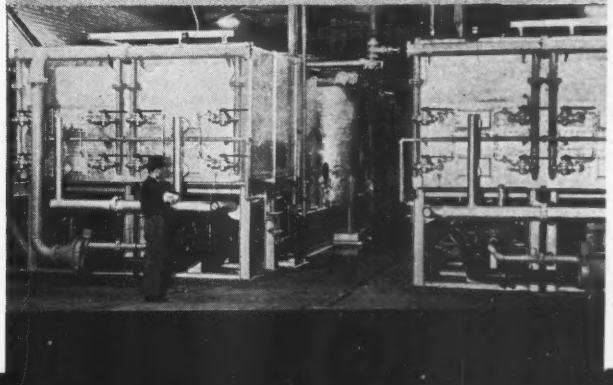
Stress relief furnaces.



Continuous controlled atmosphere annealing furnaces.



Prepared atmosphere generators.



three men in 6 hours. Former method required six men to unload a car and took 8 hours using skids, hand lift truck and a crane.

Moves to Q-2—From storage, metal ingots are used in either section of the casting shop. For the "Q-2" floor, loads are hoisted through a hatch by crane. For the "Q" floor, loads are taken to the scales at the east end. A load of zinc, total weight 12,800 pounds (four unit loads), is hauled approximately 700 feet, a regular run for the lift truck. Two or four unit loads are carried at a time, depending on melting needs.

The yard department is the other half of receiving at Bridgeport Brass. An average of 8 to 10 million pounds a week is handled in the yard, including metal shipments and all stores and machinery. Freight unloading points are located throughout the yard. These shipments averaging 5000 pounds each are unloaded by crane but are picked up from the dock and carried about 700 feet.

Billet and Bar—is a descriptive term used for the operation of transporting billets and bars to various sections of the plant. Five Towmotors are in use on this work, three on the first shift, two on the second and one on the third, used interchangeably.

At present, lift trucks handle an average of 1½ million pounds per day. Average load carried is 9500 pounds; heaviest is 12,000 pounds. Round billets anywhere from 3 to 10 inches in diameter are handled on steel pallets. Bars are handled on forks by using steel rails for setting down loads.

Loads are picked up along the length of the casting floors. Loads from building "Q" go out through the east tunnel and loads from building "Q-2" go through the west tunnel. Delivery runs are as follows: To sheet mill and rod mill storage outdoors—500 to 700 feet; to rod mill 500 to 700 feet; to tube mill 300 to 1000 feet; to hot wire mill storage 300 to 500 feet.

Pallet Storage—Truck serving the billet saw is an LT-90 in use 24 hours a day. The truck brings billets in from outside storage on pallets. Total weight averages 10,000 pounds. Billets which overhang on the pallet fall on the outside rails of the loader and the pallet is withdrawn. After cutting, billets are loaded on pans—total weight 12,000 to 13,000 pounds—and are carried 25 feet to a point beneath a hatch between floors for pickup by crane.

Pans are kept in temporary storage near the hatch opening and it is necessary for the lift truck to move the pans around for placement so that the crane may get at them. The truck handles an average of 35 loads per 8-hour shift. Each load must be handled a minimum of four times—from outside storage to weighing, from weighing to saw, from saw to temporary storage, and from storage to placement beneath the hatch.

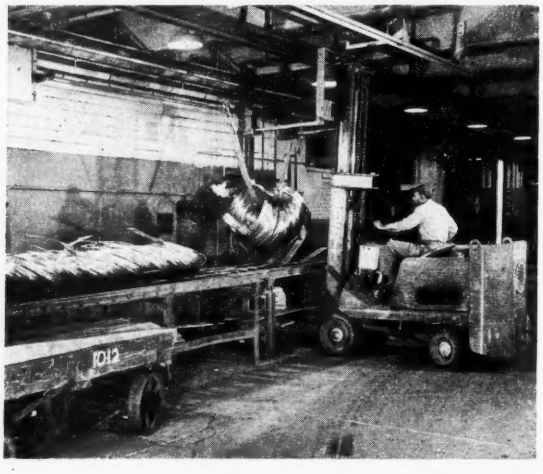
Mast Lopped Off—Two Towmotors are used in the sheet mill shipping department. Mast on one truck has been cut down 1 foot to accommodate loading of closed trucks. Previously open trucks had to be specified for loading by crane. The shipping department has an enclosed rail siding which will accommodate three cars. Presently three men per shift are employed, two shifts per day. Approximately 5½ million pounds are shipped a month. Over half of this is loaded by the two trucks. Wherever possible, loads are palletized.

A central truck repair station handles maintenance on trucks only. There isn't any definite schedule for preventive maintenance on trucks. Whenever a truck is brought in for repair, it is given a check-up for any other troubles that could cause failure later.

Since the company eliminated operator's clutch riding, only minor difficulties have turned up. At first clutches were burning out rapidly but now drivers are given a test for operation and each must have a license, issued by the company, in order to drive a truck.

LT-44 in use in sheet mill shipping department picks up a palletized load of brass sheet that weighs about 3000 pounds. To get a height that permits access to closed top trucks, the firm cut down the mast on this lift 1 foot

Coiled wire is loaded on an annealing furnace feed conveyor. Copper straps will not scratch soft metal and can be sent through acid baths, furnaces, etc., with coils. Bars, carrying hooks on each end, pick up ends of strap.



What's the $ Connection?

If there's a furnace operation in your setup . . . there's a mighty big connection between the CITIES SERVICE HEAT PROVER and your profit and loss picture.

Heat Prover—not an instrument you buy, but a service we supply—helps to increase furnace productivity through these five unique advantages:

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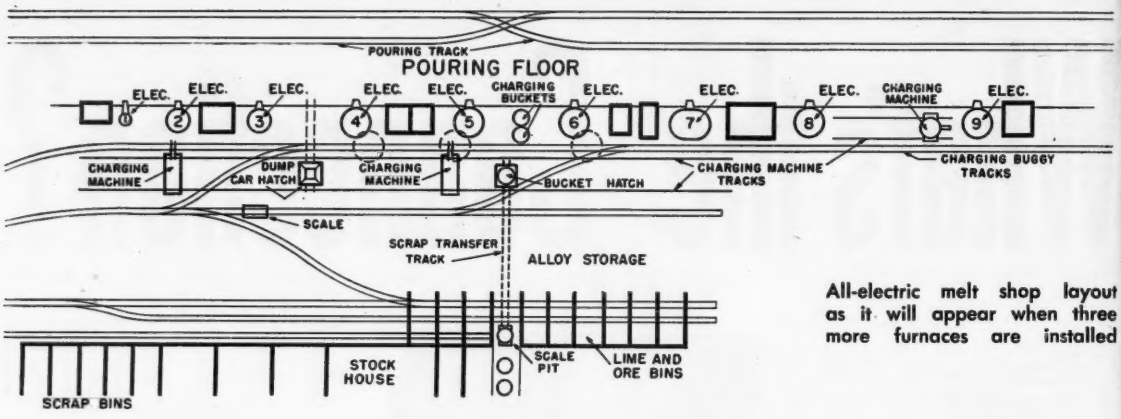

All-electric melt shop layout as it will appear when three more furnaces are installed

Converts Melt Shop To All-Electric

Three 125-ton open hearths give way to three 80-ton top charged basic electrics at Timken plant necessitating changes in existing facilities because of limited space

OPEN-hearth facilities in the melt shop of Timken Roller Bearing Co., Canton, O., are being replaced with top charged electric furnaces. This move, which was prompted by the increasing need for high-quality electric steel, will replace three oil-fired, 125-ton open hearths with three 80-ton basic electric arc furnaces. This will give Timken an all-electric shop with a full complement of nine modern furnaces.

The new furnaces are expected to better the tonnage of the existing facilities because of the increased speed of charging and melting which they will permit. Because at the present time all furnaces at Timken are door charged and because of space limitations the new installations will require changes in both equipment and procedures. The schematic layout of the melt shop as it is to be, is shown in the accompanying illustration.

Charged by Clam Shell — The new electric furnaces are to be charged by two sizes of clam shell bottom buckets, one of 950 cubic feet and the other of 450 cubic feet capacity. Since the space required for handling the larger buckets is more than the existing facilities allow a different system of handling charges from the stockhouse to the charging floor has been developed. The large buckets will be filled on tracks set 4 feet below ground level in the stockhouse. There would not be room for the stocking cranes to clear them if they were to be placed on the same level as the charging floor. The smaller size bucket will be stocked and transferred in the same manner as the present charging boxes.

The 950-cubic foot scrap buckets are also too large to be brought onto the charging floor in the usual way, since they will not clear some of the columns adjacent to the tracks and in some places will not have sufficient head room. To circumvent this a subway is being built to operate between the stockhouse and a point below an opening in the melt shop floor in front of the three new furnaces. This subway will be 13 feet 4 inches and 140 feet long in which a motor-driven transfer car, controlled from a pulpit below the charging floor, will shuttle buckets back and forth.

Four-Point Scale — The large buckets will be set on the transfer car while being filled. During this loading operation the car will rest on a four-point scale which will register at the stockhouse floor level so as to be visible to both craneman and stocker. When the bucket has been filled with the desired amount of material it will be moved on the transfer car from the stockhouse to the hatchway and lifted by crane to the charging floor. An empty bucket may then be placed on the transfer car and moved back to the stockhouse. There will be room to store four buckets on the charging floor and three additional in the stockhouse.

This new subway charge handling scheme, which is to be used to service the three new top-charged electric furnaces, has been designed to correlate with the present method to deliver a larger volume of scrap without overcrowding or interfering with the existing facilities.

350-TON, 6-MOTOR, 76′-0″ SPAN LADLE CRANE BRIDGE

BUILT BY MORGAN Engineering

Illustrated is a 350-ton, 4-girder, 24-wheel Ladle Crane bridge with six individual motor drives.

The six motors are carried on the individual trucks, each motor being coupled to a worm reduction unit on the drive axle. With this type of drive, the usual squaring shafts are eliminated.

On account of the moving mass to be controlled, which would require the usual hydraulic brake for each drive, an air braking system is provided.

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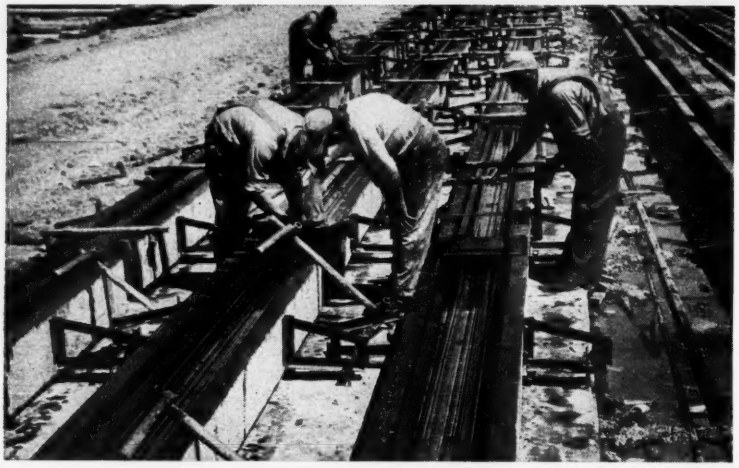


Wires are locked in groups of ten into Freyssinet cones, then pulled by hydraulic jacks to a tension of about 160,000 psi before the concrete is poured

Prestressed Beams Shore up Pier 57

High-carbon 350-foot steel rods are stretched 2 feet by hydraulic jacks. Initial stress is 160,000 psi before concrete is poured. Hardened concrete holds built-up tension

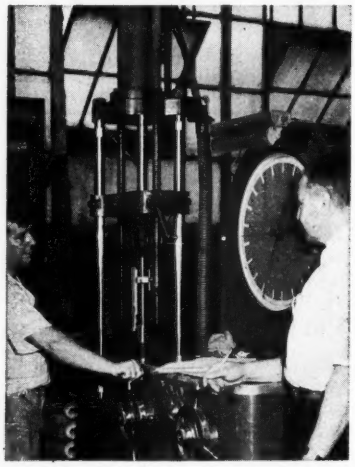
HIGH-TENSILE strength of stretched steel wire, locked into massive concrete beams, provides a sturdy foundation for the main deck of New York's new Pier 57 on the Hudson river.

Rods for the project are made from a special high carbon steel composition, containing a moderate percentage of manganese. They were made at the Worcester, Mass., plant of American Steel & Wire Division, U. S. Steel Co., then shipped to the company's Trenton, N. J., works where they were drawn cold to size and given special heat treatment. The firm says finished wire has an ultimate strength reaching more than 240,000 psi.

Foundation beams are mass-produced at Grassy Point, near Haverstraw, N. Y. In this operation, the division uses four beds, 350 feet long, each comprising three units of concrete forms to permit 48 beams to be poured at a time.

Two-Foot Stretch—High tensile steel wires are strung out in the bed, plates distributing their location strategically within the forms. At the ends of the bed, wires are divided into groups of ten. Each group is locked at either end into a specially designed cone. Two hydraulic jacks then stretch the wires to an initial stress of 160,000 psi—or a point 67 per cent of ultimate strength.

In practice, the division says each 350-foot wire is stretched about 2 feet and held there. Concrete poured into the forms surrounds each steel wire, gripping the wire and hardening the tension into the concrete mass. After concrete has cured for about three days, reaching a strength of 4800 psi, jacks are released and wires cut between the forms and beam ends.



Stress-strain curves are recorded as some of the wire is tested to determine elongation and tensile strength

High Compression—The steel of these wires is designed to possess high elasticity. Thus, if the stretch were relaxed before the concrete hardened to hold built-up tension, each wire would return to its nearly-normal length. The wires' tension imparts compression to the concrete, combining into each beam the natural strength of both materials.

To be most effective, the division reports prestressed concrete should be compressed to a high degree—in the case of modern concrete, as much as 2000 psi or more. The steel may be under a tension of more than 120,000 psi. The higher the tension of the steel, the stronger is the steel-concrete combination.

According to American Steel & Wire, the Pier 57 project calls for 3148 prestressed concrete beams. This will require 110 tons of the division's Super-Tens wire.

Rubber Punch Cuts Scrap

FORMING and blanking 1600 microphone diaphragms a day is one of the jobs at Shure Bros., Chicago. Multipress made by Denison Engineering Co., Columbus, O., is the tool employed successfully by the Chicago firm.

Blanks for the job are of 0.001-inch aluminum sheet, 4 inches square. Diaphragm is formed from the center of the blank without distortion. Maximum force required is 5 tons.

Rubber punch mounted on the ram forms the aluminum part in a steel die. Die floats in a rubber base. As the punch forms the piece it shears off excess material on the edge of the die. Formed diaphragm is then removed with an air stream.

Oil-hydraulic power provides a fast approach, slow contact with the metal and an accurate working pressure. Scrap rate on the job was cut from the 20 per cent with the former equipment to 3 per cent with Multipress.

Sea water cure for lagging steel production

A PLAGUE of open hearth steel furnace production is down-time for bottom repairs. Good medicine for excessive repairs is Permanente 165 *periclase* ramming mix—derived from sea water magnesia of highest purity.

One of the most important developments in furnace construction in the last decade, Permanente 165 is higher in MgO content. And Permanente 165 bottoms *retain higher strength* during prolonged use.

Accurately sized, pre-shrunk periclase grains give high density. *Full depth bond* is assured because patented Permanente 165 bonds itself by crystal-bridging—a solid phase reaction.

This high refractoriness, plus great resistance to chemical attack, means less down-time for repairs between heats, increased tonnage per year. Breakthrough danger is reduced to a minimum!

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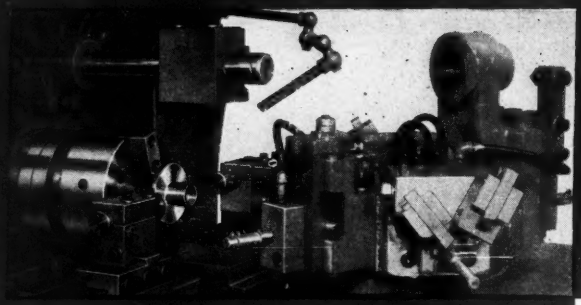
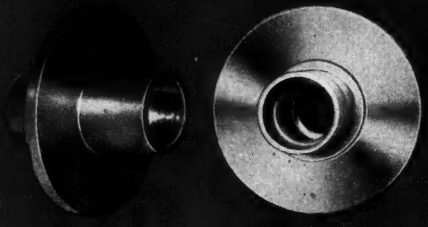
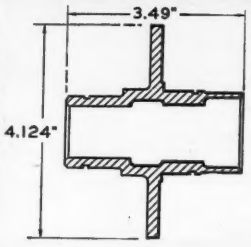




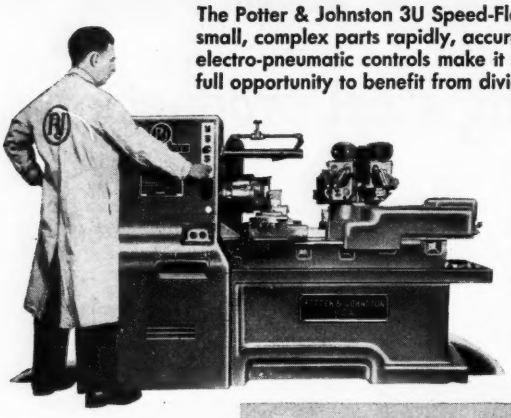
WITH A

POTTER & JOHNSTON 3U SPEED-FLEX

Automatic Turret Lathe



All the surfaces of this steel forging (indicated by heavy lines) were precision machined in one operation.



The Potter & Johnston 3U Speed-Flex Automatic Turret Lathe is specifically designed to machine small, complex parts rapidly, accurately and economically. Completely automatic operation and electro-pneumatic controls make it easy for one man to handle several machines, affording you full opportunity to benefit from divided labor costs. High spindle speeds and ample power take full advantage of fast-cutting carbide tools. Rugged, rigid, high precision construction assures long life, lasting accuracy and a full return on your investment. Meet today's demand for greater output at lower cost with a Potter & Johnston Automatic Turret Lathe equipped with expert P&J Tooling.

See for yourself how the 3U Speed-Flex can bring new standards of efficiency and economy to your difficult chucking and turning jobs. Send today for your copy of Bulletin 145 that contains complete data, specifications and a pictorial description of the Model 3U and all its advanced engineering features.

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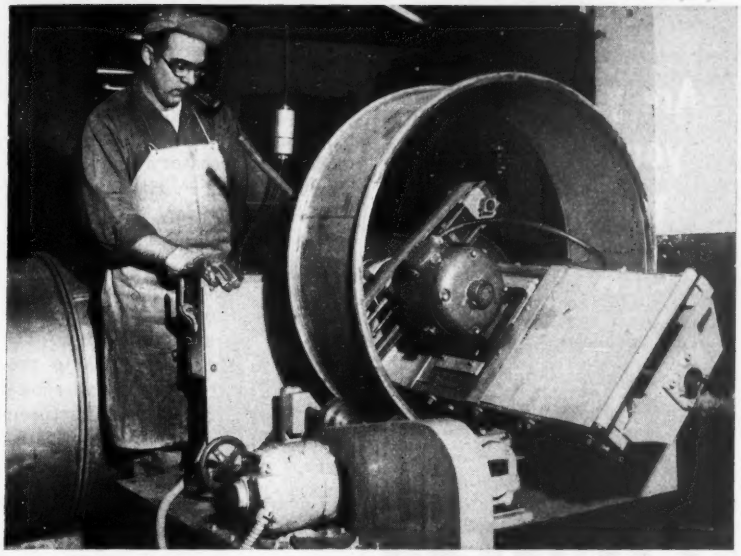

Belt Sander Replaces Hand Grinding

Double row of welds on these jet engine case assemblies was formerly ground by hand. Now Solar Aircraft Co's. Des Moines, Ia., plant has incorporated a belt sander in an automatic grinding fixture. The fixture supporting the sander moves laterally as case assemblies are rotated. Production is up 400 per cent

Drawing Dimensions in Their Place

By proper dimensioning of parts on the blueprint you can save the machine operator some time and figuring and also avoid mistakes in reading and layout

HERE'S A THOUGHT on how you might help your machinist keep busy turning out parts and keep his hands off pencil and paper. Beauty of the system is that you won't need any new equipment to do this nor will it increase your overhead one iota.

Difficulties arising from improper dimensioning of drawings can be many, varied and expensive. Often the trouble is not even incorrect dimensioning but just *unwise* dimensioning.

Pitfalls—The booklet from Gisholt Machine Co., Madison, Wis., cites the most common weak points on dimensioning and tells how to correct them. Here are some of the pitfalls: Accumulating tolerances; tolerancing to too close limits; improper choice of dimensions; failure to dimension from similar base lines on mating parts.

Example: Suppose a part is one inch thick. A hole is drilled clear through and the hole is then counterbored. Now if the man on the board marks the distance from the bottom of the counterbore to the bottom of the hole as 9/16-inch, the operator has to subtract that dimension from the overall to get his depth of counterbore. In this case it's simple figuring but it might not always be so.

Off Limits—Another sample error is that of dimensioning in a chain. That is marking a common distance between holes. The operator will lay out his dividers to that reading and go down the length of the piece marking drill locations. Result is an accumulated error until at the end an outside-limit location is quite likely.

Calling for intelligent labeling of drawn parts, the Gisholt publication tells about the errors, shows them in sample drawings and also tells about and shows the correct method of dimensioning.

Fastener Aids Assembly

QUICK self-alignment and simplified assembly of aircraft components at reduced costs is now possible with a new floating anchor nut developed by Elastic Stop Nut Corp. of America, Union, N. J.

The company says, the development provides a weight savings of 1.3 pounds per thousand pieces over earlier nuts of this type, and also eliminates costly lining-up operations when installing one-piece anchor nuts. Savings are reported as high as 3 to 4 cents per unit.

Floating Action — Special feature of the new nut which is referred to as the A-41, is the offset shoulder on the anchor lug. This assures full floating action of the nut by preventing interference between it and the two rivets holding the lug to a part or assembly.

According to the company the new unit's smaller external dimensions enable aircraft manufacturers to use it for such applications as fastening wing tips to outer wing panels where space limitations do not always permit the use of larger nuts.

The new device contains a fiber or nylon locking collar which holds the nut on the bolt with a firm, positive grip. This prevents nuts from working loose under all conditions of vibration and impact loading.

More Engine Standardization

After completing standardization of internal combustion engines in the 3 and 4-inch bore sizes, the Munitions Board Standards Agency is launching a similar drive on engines with larger bore sizes.

Manufacturers interested in standardization of accessories for these larger units should advance their recommendations to Russell A. Moody, agency director. Under consideration are feasibility and desirability of standardizing the entire gamut of parts. These include carburetors, fuel pumps, fuel filters, radiators, radiator pressure caps, tube fittings, drain plugs, oil filters, air cleaners, starters, gages, etc.

Engine standardization is being done through co-operation with an internal combustion engines ad-

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visory committee. Rear Adm. J. W. Fowler, director of the Munitions Board's Supply Management Agency, is chairman. Accessory standardization will be effected in co-operation with the new accessories and accessory mounting subcommittee. R. F. Harvey, chief of the design division, standard agency, is chairman of the latter group.

Mr. Harvey is also chairman of the basic tools subcommittee that considers retooling problems that rise out of standardization. The aim, says Mr. Harvey, is to prevent the need for extensive retooling, and to assist manufacturers where that course is found necessary.

Carriers Make Jet Oxygen

HELPING JET aircraft take a deep breath used to necessitate carrier trips to Navy shore bases for the oxygen supply. Now they have designed an oxygen plant for use on the carrier. Each plant produces 500 cubic feet of gaseous oxygen and 1500 cubic feet of gaseous nitrogen per hour. Production is accomplished exclusively by liquifaction and distillation of air from the atmosphere. Only necessary raw material is compressed air.

Need for oxygen arises when jets fly at high altitudes for long priods of time.

Power for Kuwait

Shipment of the first component parts of four generating plants, ordered by the Sheik of Kuwait, will begin in December, says Westinghouse Electric International Co. The four units, valued at $1,500,000, were ordered late last year.

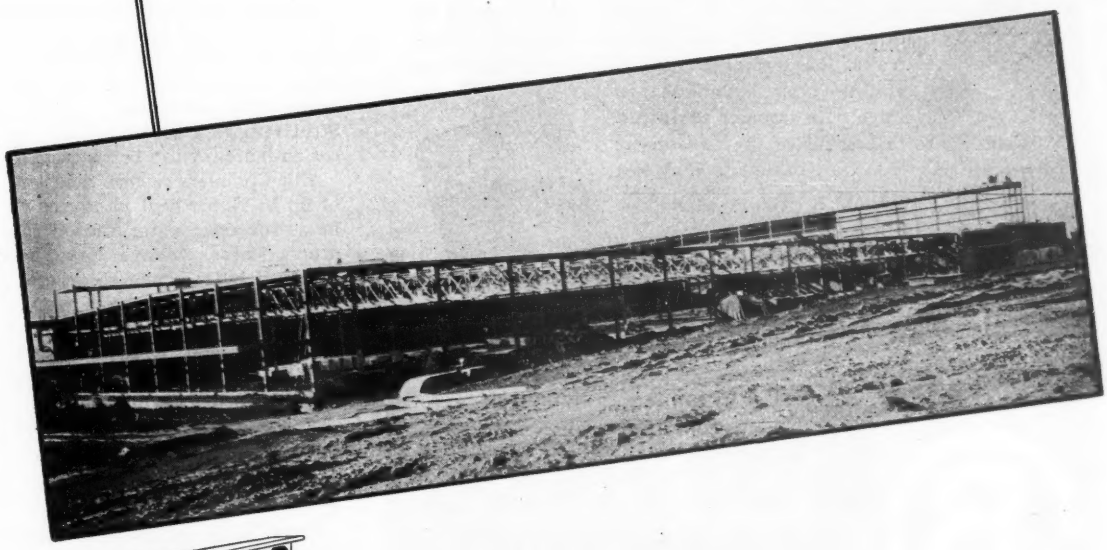
Comprising steam turbine generators and condensors, the plants will produce a maximum of 30,000 kw for Kuwait. Most of the power will be used for lighting in the capital of Kuwait, with a small portion going to industrial users.

Turbines and condensors will be manufactured at the plant in Sunnyvale, Calif., and four 11,000 v alternating current generators will be built in the company's plant at East Pittsburgh, Pa. The generating station is scheduled to operate by summer of next year.

Integrated Engineering

fabricated and erected by INGALLS

Starting from scratch, before designing the steel, Lockwood Greene Engineers, Inc. selected Ingalls for its fabricating capacity and experience in the construction of the new Beaunit Mills Plant for the manufacture of high tenacity yarn at Coosa Pines, Alabama. Adapted to Ingalls particular facilities, the Engineers designs and Ingalls schedules progressed simultaneously. Speed and economy were attained to a marked degree. The end result was a cost well below preliminary estimates.



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Substitution Continues

Construction machine makers save substantial amounts of scarce metals

CONTINUING research by the construction machinery industry to find substitutes for such scarce metals as nickel, molybdenum and copper is giving a big boost to the nation's effort to stretch the critical supply of these metals. So says National Production Authority, Department of Commerce.

As an example, International Harvester Co. reports savings of 79 per cent in nickel and 72 per cent in molybdenum by switching from scarce nickel and moly alloys to relatively new chromium-boron steels for certain parts of their crawler tractors and trucks.

Search Goes On—Research continues on developing noncritical alloys for such hard-working parts as steering knuckles, king pins and transmission and differential gears.

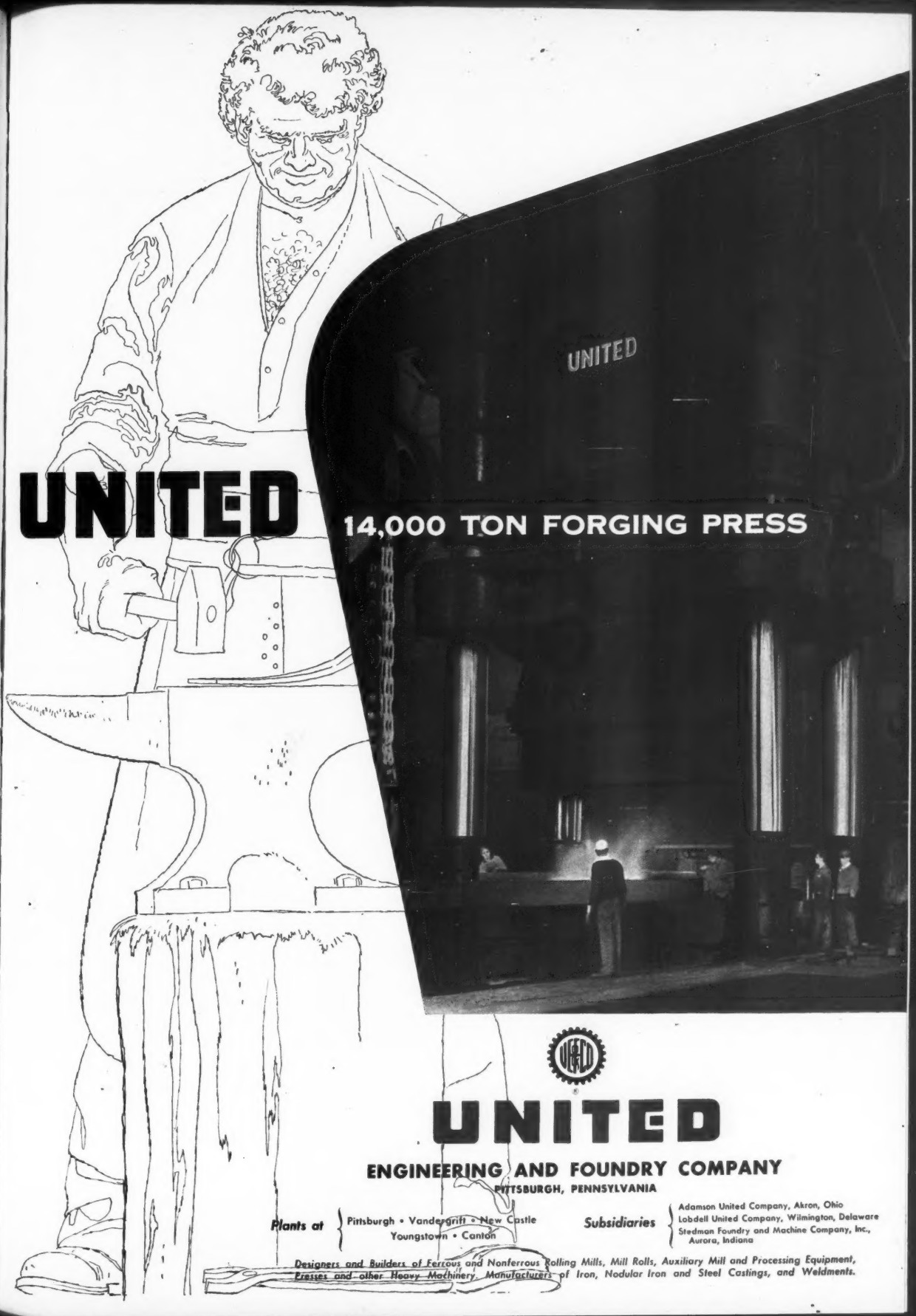
Caterpillar reports savings of over 77 pounds of nickel in each D8 tractor. Principal switches have been from nickel alloy steel to induction hardened plain carbon steels. Caterpillar estimates total nickel savings of almost 12,000 tons over the past 10 years.

Radiator Problem—Substitutions for scarce copper and brass in radiators are still in the experimental stage. Some progress has been made with aluminum radiators. Steel radiators coated with a corrosion-inhibitor are being tested.

Allis-Chalmers reports reductions of up to 27 per cent in copper and brass for their water and oil radiators. These savings have been achieved by reducing thickness of tanks and headers by one gage, by reducing fin stock from 0.0045 to 0.0035-inch and by reducing tube-wall thickness from 0.008 to 0.006-inch. Reducing the number of fins per inch has made further savings possible.

Stock Sizes Announced

Stock sizes for the new Timken Roller Bearing Co. Graph-Mo Hollow-Bar are to be from 4 to 16 inches outside diameter. The new graphitic steel product—a turned and bored bar section—was announced last week in STEEL on page 118.



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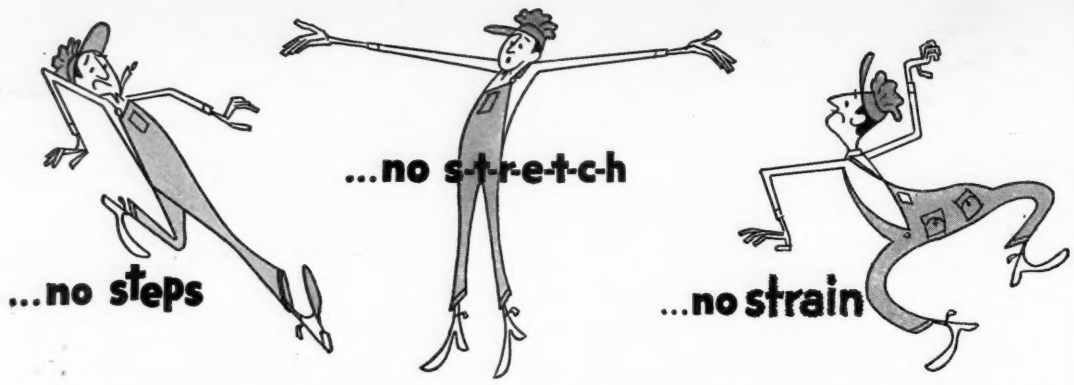

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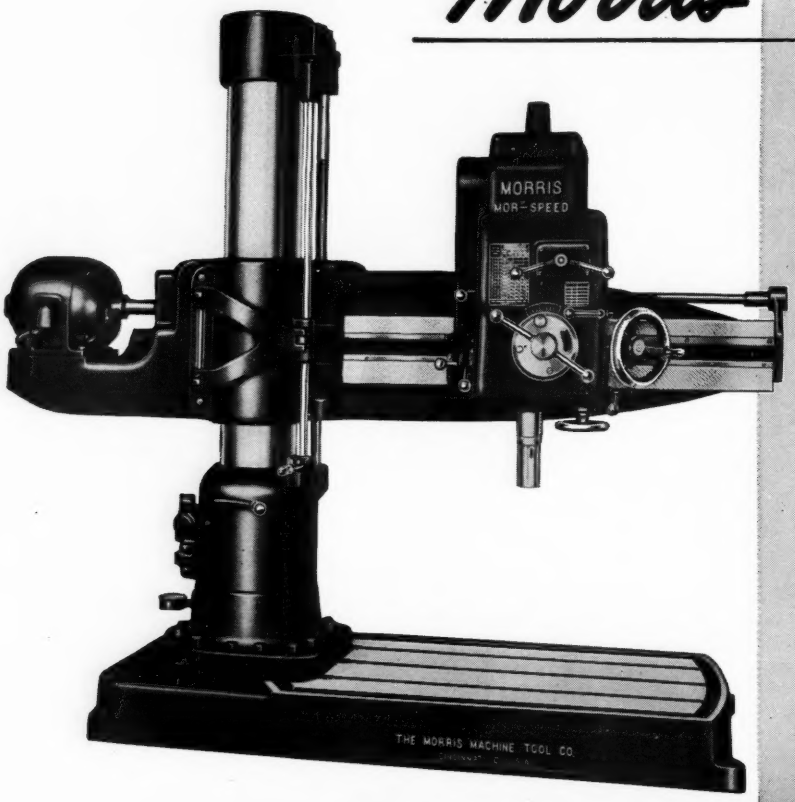

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CALENDAR
OF MEETINGS

September 3, Steel Kitchen Cabinet Manufacturers Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

September 3-13, Centennial of Engineering, Convocation Period: General manager, F. W. Edwards. Address: 57th St. & S. Shore Drive, Chicago 37.

September 4-5, National Conference on Industrial Hydraulics: Illinois Institute of Technology, sponsor, Hotel Sherman, Chicago. Institute address: Technology Center, Chicago 16. Conference secretary: John C. Duba.

September 4-6, American Institute of Chemical Engineers: Palmer House, Chicago, Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

September 8-9, National Society of Lubrication Engineers: National symposium on fundamentals of friction and lubrication in engineering, Hotel Sherman, Chicago. Society address: 343 S. Dearborn St., Chicago 4. Secretary: W. F. Leonard.

September 8-10, American Standards Association: National standardization conference, Museum of Science & Industry, Chicago. Association address: 70 E. 45th St., New York 17. Secretary: G. F. Hussey Jr.

September 8-11, American Institute of Mechanical Engineers: Fall meeting, Hotel Sheraton, Chicago. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

September 8-12, Instrument Society of America: Annual fall meeting and exhibit, Public Auditorium & Hotel Cleveland, Cleveland. Society address: 921 Ridge Ave., Pittsburgh 12. Secretary: Richard Rimbach.

September 9-11, Society of Automotive Engineers: National tractor meeting, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 9-13, American Chemical Society, Chicago Section: National chemical exposition, Chicago Coliseum, Chicago. Address: 86 E. Randolph St., Chicago 1.

September 10-12, Porcelain Enamel Institute: Shop Practices Forum, University of Illinois, Urbana, Ill. Institute address: Du Pont Circle Bldg., Washington 6. Secretary: John C. Oliver.

September 11, American Iron & Steel Institute: Regional technical meeting, Palmer House, Chicago. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

September 11-14, Packaging Machinery Manufacturers Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 342 Madison Ave., New York 17.

September 14-17, National Automatic Merchandising Association: Annual meeting and exhibit, Palmer House, Chicago. Association address: 7 S. Dearborn St., Chicago. Secretary: C. S. Darling.

September 14-18, Pressed Metal Institute: Annual fall meeting, Pocono Manor, Pa. Institute address: 2860 E. 130th St., Cleveland 20. Manager: Orrin B. Werntz.

September 14-19, American Chemical Society: Fall meeting, Atlantic City, N. J. Society address: 1155 16th St. NW, Washington. Executive secretary: Alden H. Emery.

September 14-20, Concrete Reinforcing Steel Institute: Semi-annual fall meeting. The Broadmoor, Colorado Springs, Colo. Institute address: 38 S. Dearborn St., Chicago 3. Secretary: H. C. Delzell.

September 15-17, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 109 N. Wabash Ave., Chicago 2. Secretary: Charles F. Weil.

September 18, Material Handling Institute: Hotel Cleveland, Cleveland. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kennedy Hanson.

September 19, The Wire Association, Nonferrous Division: First regional meeting, Elton Hotel, Waterbury, Conn. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

September 19-20, Automotive Engine Rebuilders Association: Midyear meeting, board of directors, Edgewater Beach Hotel, Chicago. Association address: 419 N. Capitol Ave., Indianapolis. Executive vice president: R. G. Patterson.

September 16-17, Industrial Truck Association: Fall meeting, Hotel Cleveland. Association address: 900 F St. NW, Washington 4. Secretary: W. Van C. Brandt.

Sept. 22-23, American Coke & Coal Chemicals Institute: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 711 14th St. NW, Washington 5. Executive secretary: Samuel Weiss.

September 22-23, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland 15. Secretary: F. Kermit Donaldson.

September 22-24, National Truck Body Manufacturers Association: Annual meeting, Muehlebach Hotel, Kansas City, Mo. Association address: DuPont Circle Bldg., Washington, D.C. Secretary: Stanley A. Swanson.

September 22-25, American Mining Congress: Metal & nonmetallic mineral mining conference, Denver. Congress address: 1102 Ring Bldg., Washington 6. Secretary: Julian Conover.

September 24-26, American Hot Dip Galvanisers Association Inc.: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1506 First National Bank Bldg., Pittsburgh. Secretary: Stuart J. Swennson.

September 28-October 2, National Screw Machine Products Association: Fall membership meeting, The Broadmoor, Colorado Springs, Colo. Association address: 2860 E. 130th St., Cleveland 20.

September 29-30, American Machine Tool Distributors Association: Annual meeting, The

(*Continued on Page 122*)

Here is a plain statement without any frills: you can increase your melting capacity if you use GLOBE SUPERIOR LADLE BRICK. This statement has to be proved, of course, before it can be accepted at face value. Well, it's proved every day in steel plants all over the country. Here's how it works: the labor and materials used for refractory replacement are a terrific drag on production time. The excellent quality of GLOBE SUPERIOR LADLE BRICK, wire cut or dry pressed, makes it last longer. By lasting longer, it salvages much of the time lost in refractory replacement. The result, of course, is increased melting capacity. Let us help you select the right type of GLOBE SUPERIOR LADLE BRICK for your particular needs. You'll find it quite profitable.

SERVING THE STEEL INDUSTRY SINCE 1873

The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

(*Concluded from Page* 121)

Cavalier, Virginia Beach, Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thos. A. Fernley.

September 29-Oct. 3, American Institute of Steel Construction Inc.: Annual convention, Empress Hotel, Victoria, B.C. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

September 30-Oct 3, Association of Iron & Steel Engineers: Fall meeting and exhibit, Hotel Statler and Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Director: T. V. Ess.

OCTOBER

October 3-4, American Institute of Mining & Metallurgical Engineers, National Open Hearth Steel Committee: Fall meeting, Southern Ohio Section, Deshler-Wallick Hotel, Columbus, O.

October 3-5, Society of Industrial Designers: Annual meeting, Shawnee Inn, Shawnee-on-Delaware, Pa. Society address: 48 E. 49th St., New York 17. Secretary: Sally G. Swing.

October 6-7, Rail Steel Bar Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 38 S. Dearborn St., Chicago. Secretary: W. H. Jacobs.

October 6-10, National Hardware Show: Grand Central Palace, Atlantic City, N. J. Managing director: Frank Yeager.

October 9, American Iron & Steel Institute: Regional technical meeting. William Penn Hotel, Pittsburgh. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

October 11-14, National Association of Waste Material Dealers Inc.: Fall meeting, Los Angeles. Association address: 271 Madison Ave., New York. Secretary: Clinton M. White.

Cuyahoga's skilled engineers and wire part craftsmen can give you the advantage of their experience and engineering know-how in the design and production of custom-built springs, wire parts, wire forms and stampings in any size, shape or metal to fit the requirements of your product.

Contact your Cuyahoga representative

SUBSIDIARY OF Barium STEEL CORPORATION

The CUYAHOGA SPRING Co.

10200 BEREA ROAD • CLEVELAND 2, OHIO

October 13-17, American Institute of Electrical Engineers: Fall general meeting, New Orleans, La. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

October 16-17, Gray Iron Founders' Society Inc.: Annual meeting, Hotel Cleveland, Cleveland. Society address: 210 National City-E. 6th St. Bldg., Cleveland. Secretary: Donald H. Workman.

October 16-18, Foundry Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

October 18-19, American Society for Metals: Annual seminar, Benjamin Franklin Hotel, Philadelphia. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 19-21, Conveyor Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: No. 1 Thomas Circle, Washington 5. Executive vice president: R. C. Sollenberger.

October 20-22, Packaging Institute: Annual meeting, Hotel Commodore, New York. Institute address: 342 Madison Ave., New York 17. Secretary: L. V. Burton.

October 20-24, American Society for Metals: Annual meeting, Benjamin Franklin Hotel, Philadelphia. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 20-24, American Welding Society: Annual meeting, Bellevue Stratford Hotel, Philadelphia. Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.

October 20-24, Society for Non-Destructive Testing Inc.: Annual meeting, Philadelphia. Society address: Box 710, Evanston, Ill. Secretary: Philip B. Johnson.

October 20-24, American Institute of Mining & Metallurgical Engineers: Fall technical session, Philadelphia. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Robie.

October 20-24, National Metal Congress & Exposition: Convention Hall, Philadelphia. Secretary: W. H. Eisenman, 7301 Euclid Ave., Cleveland 3.

October 20-24, National Safety Council: National safety congress & exposition, Conrad Hilton Hotel, Chicago. Council address: 425 N. Michigan Ave., Chicago 11.

October 22-24, Porcelain Enamel Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: DuPont Circle Bldg., Washington 6. Secretary: John C. Oliver.

October 22-24, Society of Automotive Engineers: National transportation meeting, William Penn Hotel, Pittsburgh. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

October 27-29, National Lubricating Grease Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute address: 4638 J. C. Nichols Parkway, Kansas City 2, Mo. Executive secretary: Harry F. Bennetts.

October 27-29, American Gear Manufacturers Association: Fall meeting, Edgewater Beach Hotel, Chicago. Association address: 302 Empire Bldg., Pittsburgh 22. Executive secretary: John C. Sears.

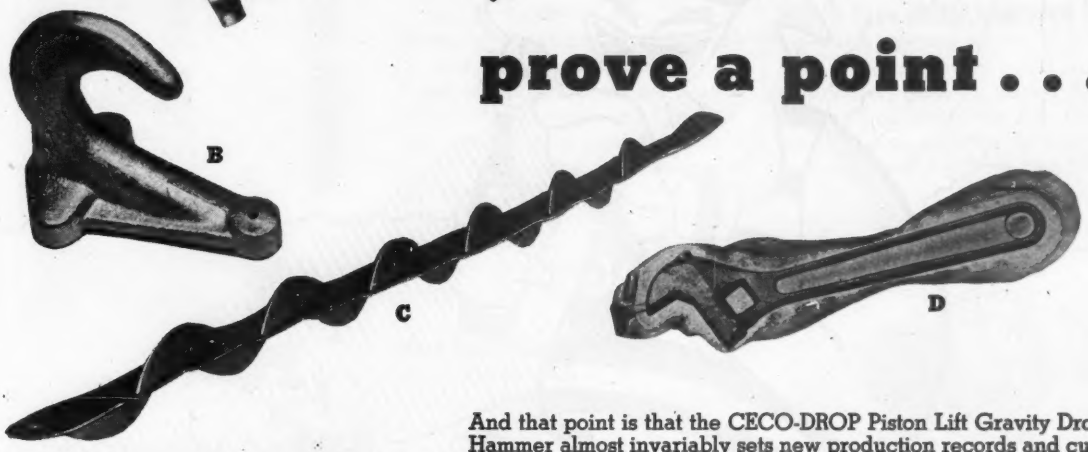
October 27-30, American Gas Association: Annual meeting and exposition, Municipal Auditorium, Atlantic City, N. J. Association address: 420 Lexington Ave., New York 17. Secretary & convention manager: Kurwin R. Boyes.

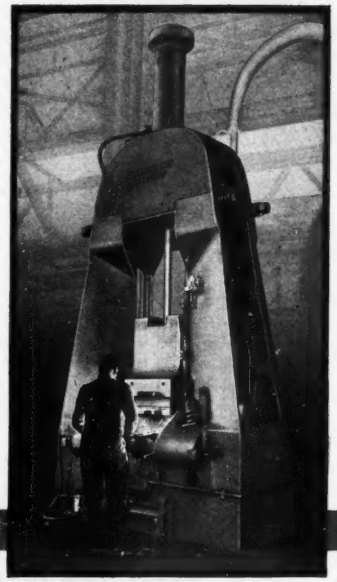
October 27-31, Electrochemical Society Inc.: Fall meeting, Mt. Royal Hotel, Montreal. Society address: 235 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

October 30-November 2, National Tool & Die Manufacturers Association: Annual meeting, Hotel Sheraton, Rochester, N. Y. Association address: 906 Public Square Bldg., Cleveland. Executive secretary: George S. Eaton.

November 3-4, Society of Automotive Engineers: National diesel meeting, Hotel Chase, St. Louis. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

CECO-DROP Forgings prove a point . . .





And that point is that the CECO-DROP Piston Lift Gravity Drop Hammer almost invariably sets new production records and cuts forging costs wherever installed.

A Feeder Bar for Sewing Machine. Formerly forged on a board drop hammer. Transferred to a similar weight Ceco-Drop, production increased 20%.

B Tank Hook—forged two at a time from round cornered square stock. Production increased 20% when made on 2500 lb. Ceco-Drop.

C Mine Bit-Forging is made of tough steel 2⅜" in dia. Unusual length requires accurate die match in passing through 3 die impressions.

D 12" Adjustable Wrench forged from bar stock, 7% increase in production when made on Ceco-Drop.

These are but a few of the many examples we could use showing how production improves when a Ceco-Drop piston-lift, gravity-drop hammer replaces a regular board drop hammer—and how the cost per piece goes down. Ceco-Drop Hammers are the result of over a half century of experience in the design and manufacture of drop hammers. Ceco-Drops cost less to operate, they forge more and the production improvement is notable. Inquire today about Ceco-Drop Hammers. Ask for a copy of Bulletin 11-L-O.

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

Iron and Steel *need protection too!*

If it's made of iron or steel,
and exposed to the elements,
remember to have it
Hot-Dip Galvanized—*sealed in zinc!*

HANLON-GREGORY
Galvanizing Company

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The World's Largest Job Galvanizing Plant

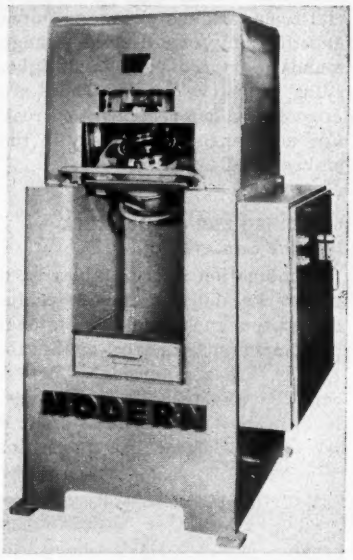
A. J. DIEBOLD, President

in the heart of the STEEL INDUSTRY

HOT DIP GALVANIZING

galvanizing . . . . pickling . . . . painting . . . . oiling

New Products and Equipment



GEAR CHAMFERING MACHINE
. . . works tooth edges in 30 seconds

Machine Chamfers Zerol Gears

USE REPLY CARD—CIRCLE No. 1

Model BM-2055 Burr-Master, a machine made for chamfering zerol bevel gear teeth is announced by Modern Industrial Engineering Co., 14230 Birwood, Detroit 4, Mich. The machine deburrs and chamfers tooth edges at both heel and toe of an 8-inch diameter, 99-tooth, 12.53-pitch gear in 30 seconds cutting time.

Pneumatic cylinder actuated by pushbutton brings work into cutting position. Teeth are chamfered by rotating the work in timed relation to the cutting action of four dovetail-type high speed steel form tools. When cutting cycle is completed, work is lowered into the unloading position automatically. Form tools are actuated by a combination rocker arm motion that generates cutting action to chamfer and deburr edges around the root of the gear tooth.

REPLY CARDS

on page 137 will bring you more information on any new products and equipment in this section.

Two-Stage Air Compressor

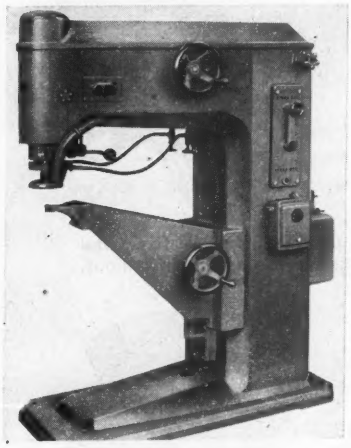
USE REPLY CARD—CIRCLE No. 2

Curtis Pneumatic Machinery Division, St. Louis 20, Mo., offers a 15 and 20-hp, two-stage, air-cooled air compressor. Unit has a 7½ x 5-inch low pressure and a 4 3/15 x 5-inch high-pressure cylinder. Cushioned annular type disk valves and a four-section intercooler obtain high efficiency in air delivered. Balanced design, with aluminum low-pressure and cast iron high-pressure pistons, provides smooth, quiet operation.

Horn Router Introduced

USE REPLY CARD—CIRCLE No. 3

Model 434H Horn Router, applicable for many types of trim routing operations in nonferrous metals that require an unusually great swing clearance is introduced by Ekstrom, Carlson & Co., Dept. M-7, 1400 Railroad Ave., Rockford, Ill. Machine can be equipped with 3, 5 or 7½ hp, 3600-rpm drive motors. Spindle speeds of 10,000 or 20,000 rpm are obtained quickly by a two-step drive pulley arrangement.



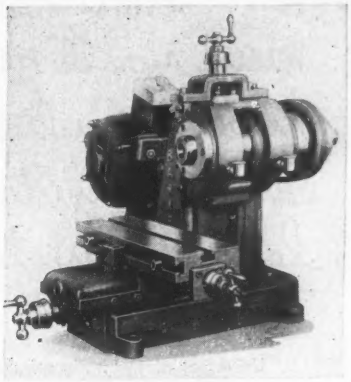
AMPLE SWING CLEARANCE
. . . used for nonferrous trim routing

Adjustable three-position positive depth stop is built in for precision step-routing. Minimum clearance between the collet chuck and the horn measures 10 inches. One standard pilot bracket and the guide is furnished with the machine. Others can be designed and supplied on special order.

Bench-Type Miller Improved

USE REPLY CARD—CIRCLE No. 4

Improved tool room model bench-type miller, made by Barker Engineering Co., 500 Green Rd., Cleveland 21, O., offers micrometer feed screws and a three-way travel feature. Head travel is 3¼ inches; table travel, 5 inches; and saddle travel, 3 inches. All travels can be locked. Table size is 4 x 12 inches.



BENCH-TYPE MILLER
. . . handles small-run precision jobs

Machine is applicable for handling small run precision jobs. It is set up easily and uncomplicated in changeover for work on different tools and special fixtures.

Medium Duty Knife Grinder

USE REPLY CARD—CIRCLE No. 5

Knife grinder, the medium-duty model NL, is introduced by Samuel C. Rogers & Co., 183-205 Dutton Ave., Buffalo 11, N. Y. The automatic all-steel welded cabinet-base machine is adapted to fast and accurate care of a wide knife variety. The unit incorporates electric table drive and includes the company's control switches and 1½-hp reversing motor.

Table speeds are variable and

table reversals smooth and shock-free. Grinding pressures are absorbed by the heavy base through a machined combination of flat and angled V ways. Ways are self-aligning to increase period of accurate service.

Recording Potentiometer

USE REPLY CARD—CIRCLE No. 6

Weston Electrical Instrument Corp., 617 Frelinghuysen Ave., Newark 5, N. J., offers a recorder of the null-balancing type, designed to gain mechanical and electrical simplicity. Among features is a simplified chart frame that swings out a full 180 degrees on straight pivots with the chart always remaining in time sequence. When the frame is opened, the pen lifts automatically, thus reducing false line drawing and eliminating pen damage.

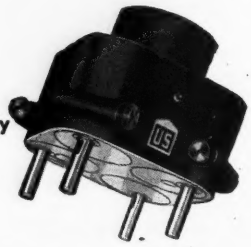
Chart speeds from inches-per-hour to feet-per-minute are available quickly without complicated gear changes. A simple screwdriver adjustment provides a selection of five different chart speeds. These speeds can be doubled or quadrupled by changing one worm and gear assembly, without special tools. Range change requires substitution of desired range standard on the panel and tightening by screw driver. There are no soldered connections to break and no change is necessary in the universal slide wire.

COMPARE THE PRICE....
AND PERFORMANCE.....
and you'll rely on us for any type of multiple spindle fixed center, adjustable or individual lead screw tapping head.

Universal joint with slip spindle fixed locating plate.

Two spindle head unit—one spindle fixed, the other spindle adjustable for the fixed positions.

Single eccentric type for equally spaced holes on bolt circles.



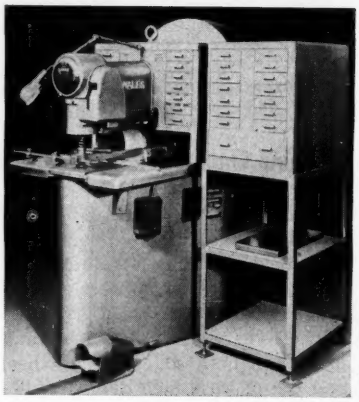
US HEADS
SINCE 1915

UNITED STATES DRILL HEAD CO.
CINCINNATI 4, OHIO

Combined Table, Tool Rack

USE REPLY CARD—CIRCLE No. 7

Combination work tables and tool racks and an auxiliary cabinet and tool rack, made as optional equipment with its sheet metal fabricator, are announced by Wales-Strippit Corp., N. Tonawanda, N. Y. Tables and racks are placed on either side of the fabricator



. . . provides added work area, storage

and are the same height as the bed table. The table-rack combination is adjustable front-to-back, has adjustable feet for leveling and provides additional work and storage area.

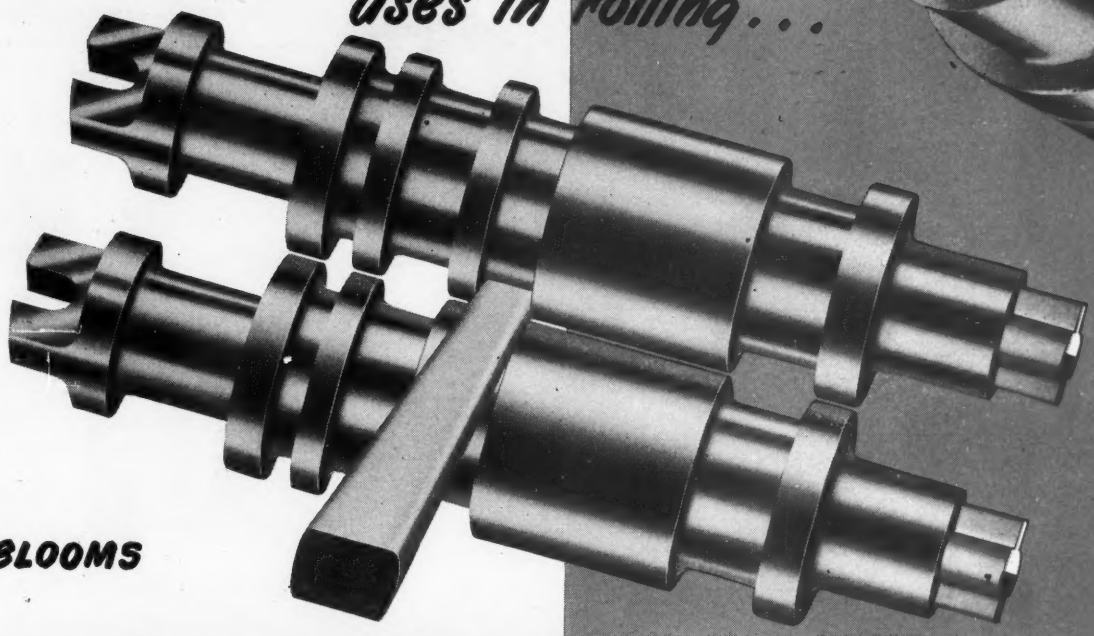
Auxiliary cabinet and tool rack provides additional drawers to hold punch assemblies and dies, with two shelves for storing other tooling.

Spot-Welding, Soldering Tool

USE REPLY CARD—CIRCLE No. 8

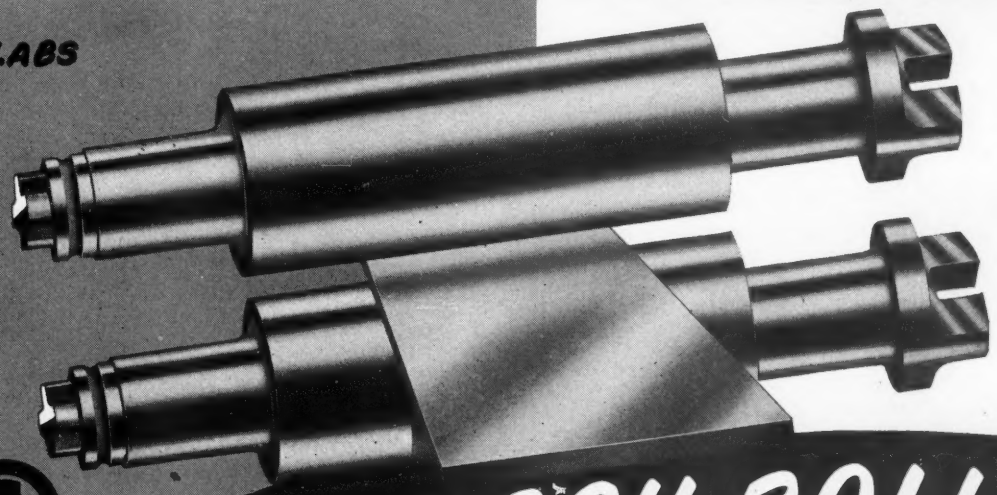
Resistance spot welding and soldering machine, the model 5000 WVS, equipped with timer, is offered by Joyal Products Inc., 56 Belmont Ave., Newark 3, N. J. The machine is designed to eliminate shrinkage in the manufacture of

PHOENIX "A" Alloy Steel ROLLS are color marked for specific uses in rolling...



BLOOMS

SLABS



P.R.W.

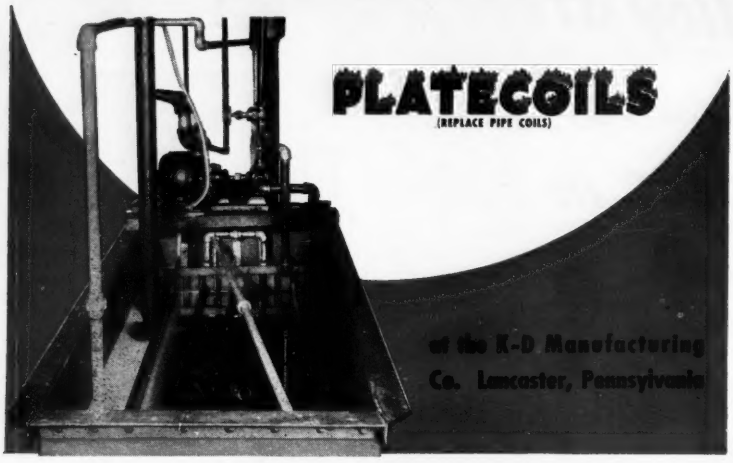
PITTSBURGH ROLLS

PITTSBURGH ROLLS DIVISION of BLAW-KNOX COMPANY • PITTSBURGH, PA.

OTHER PITTSBURGH ROLL TYPES

Chill
Moly Chill
Special Rail Finishing
Phoenix "K"
Pittsburgh Grade 25
Pittsburgh Grade 35
Pittsburgh Grade 45
Pittsburgh Grade 55
Pittsburgh Grade Special Process
Phoenixloy
Phoenix Metal
Phoenix Metal Master

Carbon Steel



cool this quench oil tank for 1/3 the cost

At the K-D Manufacturing Company, a manufacturer of metal stampings, Platecoils were installed in an oil quench tank for only 1/3 the cost quoted by a standard heat exchanger manufacturer. Three hundred pounds of material per hour had to be quenched from 1600 °F. to 140 °F. with the quench oil being recirculated at 15 gpm. The Platecoils were specified to maintain oil temperature of 110 °F. using 75° cooling water at 6 gpm.

The efficiency of the Platecoils exceeded expectations, reducing the oil temperature to 85 °F. within 25 minutes. According to Mr. Madeira, Tool Room Foreman: *"Under extreme summer temperatures and the largest loads ever quenched, the installation maintained the desired quench temperatures."*

The reason Platecoils cost so much less is they have so much more effective heating or cooling area in a limited space. For instance, a 22" x 47" Platecoil gives the same heat transfer surface as 32 ft. of 1½" pipe which would require approximately 30" x 60" of space. Thus a Platecoil only half the size often provides a much greater BTU transfer per unit area. This means savings in initial cost, tank space and installation time.

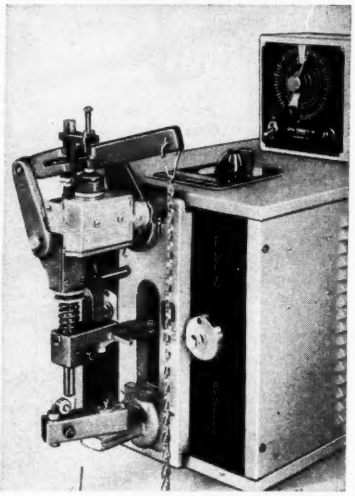
Everywhere that Platecoils are used the story is always the same: They heat or cool faster, can be installed quicker at only a fraction of the cost of other methods. Write for Bulletin No. P72.

PLATECOILS gives you these ADVANTAGES

- Cleaned and Repaired Without Dumping Tank Solution
- Greater BTU Transfer Per Unit Area
- Weighs Only Half as Much as Pipe Coil
- No Threaded Joints in Tank
- Increased Tank Capacity
- Fast, Easy Installation
- Easy to Clean

instruments or other small, metal products. It can silver solder, soft solder or spot weld precious and dissimilar metals. It spot welds steel parts up to 3/16-inch thick; welds copper to bronze or copper to copper up to 0.040-inch thick and brass to brass up to 0.080-inch.

One feature is a quick adjusting device for controlling pressure and length of electrode travel for positive soldering and welding.



. . . quick adjustment for pressure control

Model operates on 220-v ac, 25-amp, equipped with water cooled electrode. Electrodes are designed especially for each job. Their operation is spring-action controlled so that, when electrode arms are closed, work is held firmly in position during soldering and cooling.

Machine Spray-Cleans Masks

USE REPLY CARD—CIRCLE No. 9

Automatic mask washer, made by Conforming Matrix Corp., Factories Bldg., Toledo 2, O., uses 50 gallons of solvent and 40 nonclogging nozzles to direct a spray against both sides of work being cleaned. Unit has splash-proof lid construction and a visual fluid level gage. Its solvent consumption is reported as low as 2 to 5 gallons per 8 hours in some applications.

Drain for sludge removal is built with floor clearance for a standard 5-gallon bucket. Pump has mechanical seals to eliminate packing replacement. Intake strainer is provided as standard equip-

the big '52 metal show

TRADE IN OLD IDEAS FOR NEW...

The most valuable asset of the Big Metal Show beyond its impelling hold on all metals industries people lies in its odd virtue of sparking new ideas and changing old concepts of all things concerning metals. Don't miss this Big Metal Show . . . it'll be jam-packed with stimulating, refreshing, different idea-changers!

OCTOBER 20-24

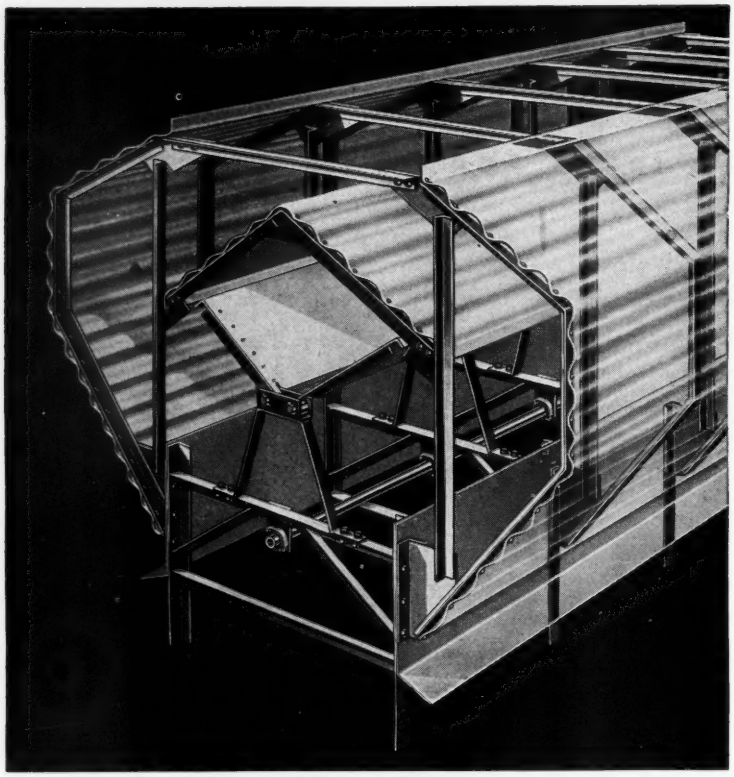
PHILADELPHIA, PA.

NATIONAL METAL EXPOSITION

NATIONAL METAL CONGRESS

HOT, STUFFY AIR

BREEDS INACTION



VENTILATE EFFICIENTLY WITH BURT MONOVENT

Workmen *can't* attain top efficiency when air is bad. Fresh, active air means active workers—better production, less rejects, reduced absenteeism.

Heat, smoke and fumes are replaced by fresh, live air economically with the Burt Monovent Continuous Ridge Ventilator. The Monovent opens the entire roof line to exhaust bad air rapidly from the whole structure. Standard sizes from 4″ to 96″ handle almost any application.

Its simple, heavy construction assures long, trouble-free life with almost no maintenance. See Sweet's for complete Burt Monovent data or write for Bulletin SPV-6.

FAN & GRAVITY VENTILATORS • LOUVERS • SHEET METAL SPECIALTIES

The Burt Manufacturing Company

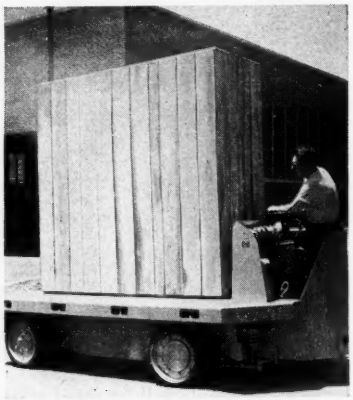
905 So. High St. Akron II, Ohio

ment. Machine takes 37 x 24 inches floor space, is 47 inches high. Mask cleaning area is 32 x 15 x 6 inches.

Extra Heavy-Duty Load Carrier

USE REPLY CARD—CIRCLE No. 10

Load carriers in capacities up to 36,000 pounds are available from Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa. Trucks are designed to handle large, bulky loads such as crated machinery from assembly and crating areas to shipping



. . . features four-wheel power steering

docks and railroad sidings. Loads are placed on the carrier and removed by fork trucks or cranes.

The truck features four-wheel power steering to ease operation and maneuverability. When an extra-large load is handled, the driver can turn around and drive the truck backwards to gain visibility.

Slope Control Assembly

USE REPLY CARD—CIRCLE No. 11

Control accessory designed for exacting welding applications involving aluminum, magnesium and dissimilar metals is announced by Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich. Control is available as an accessory, or a built-in feature. Plug-in connectors permit easy replacement. NEMA 7B and 9B sequence timers are interchangeable.

Among benefits attributed to control application are reduced tip pickup and resulting greater number of welds before electrodes must be cleaned. Expulsion and splatter should be reduced materially.

for economy in coiling, knotting, forming —

use **Pittsburgh**

M. B. Hard Drawn and Oil Tempered SPRING WIRE

You, like many others will find that Pittsburgh Spring Wire gives you economy in your operations that looks good on your cost sheets. The close control of chemistry, the precision wire drawing at Pittsburgh Steel gives you a wire that is best suited for your coiling, knotting, and forming operations. It has uniformly high tensile strength and the stiffness to give you the best finished spring. Its size accuracy and ductility make it easy to work in your machines. Available in M. B. and H. B. grades. Specify Pittsburgh Steel Spring Wire for all your production. For information write Department S, Grant Building, Pittsburgh 30, Pa.

Pittsburgh Wire

A product of **PITTSBURGH STEEL COMPANY**

Control is available with 600 or 1200 frame contractor. Over-all cabinet dimensions are 62 x 24 x 15 inches.

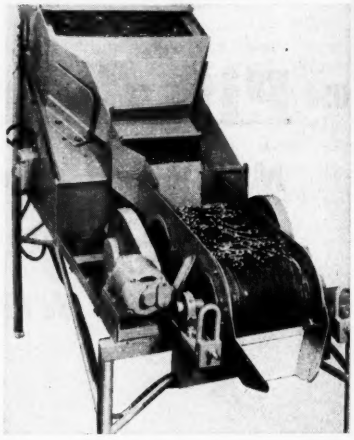
Mechanical-Magnetic Separator

USE REPLY CARD—CIRCLE No. 12

Combined mechanical and magnetic separator, model MMG 34-12, is announced by Roto-Finish Co., 3700 Milham Rd., Kalamazoo, Mich. Separator is designed to separate parts from abrasive chips where both ferrous and nonferrous parts are processed. Magnetic and mechanical separating mechanisms are interchangeable on the portable frame.

In operation, a hoist pan containing mixed parts and processing media is placed on the incline loading support of the separator. For mechanical separations, the mixed mass passes over a motor-driven, agitated separator screen. Separation is made as the oversize parts are discharged from the top of the screen, while processing chips go through the screen and discharge into a hoist pan below.

In magnetic separation, parts and chips pass over a magnetic pulley where parts are separated magnetically, then conveyed to a container. Chips again fall into a hoist pan below. Unit is driven by a 1/3-hp, 220 or 440-v, 3-phase motor.



. . . separating units are interchangeable

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ROLL FORMING MACHINES
PUNCH TYPE CUT-OFFS
LOCK SEAM TUBE MILLS
ARDCORLOY TUBING ROLLS AND FORMING ROLLS
To Your Specifications or Ardcor Design
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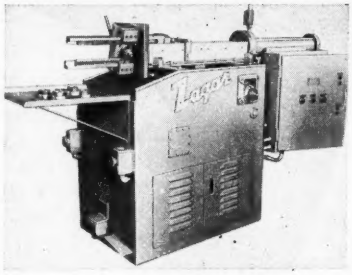
American ROLLER DIE CORPORATION
20700 St. Clair Avenue · Cleveland 17, Ohio

Horizontal Broaching Machine

USE REPLY CARD—CIRCLE No. 13

Zagar Tool Inc., 24000 Lakeland Blvd., Cleveland 23, O., offers its Hyspeed 20 broaching machine with cycles that reach 700 strokes per hour. Machine is hydraulically operated, electrically controlled. Its control panel has a selector switch that determines an automatic return stroke or a conventional broaching stroke that stops at the end of each cutting stroke. The coolant system, integrated with the machine, pumps either light or heavy cutting solvents at sufficient volume.



. . . cycles reach 700 strokes per hour

Maximum pull is 6000 pounds. Maximum feed stroke is variable

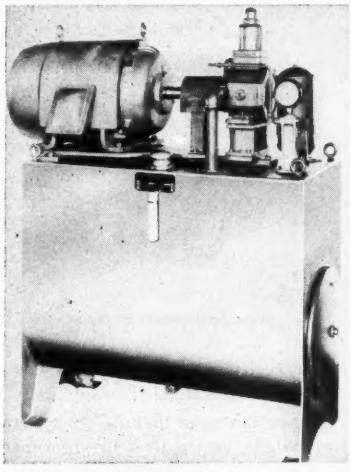
between 2 and 27 fpm; full return stroke of 20 inches requires 1½ seconds.

Power Units: 30-80 Gallon Sizes

USE REPLY CARD—CIRCLE No. 14

Superdraulic Corp., 14256 Wyoming Ave., Detroit 4, Mich., offers a series of power units available in 30, 60 and 80-gallon standard sizes. Units are designed to conserve space and are assembled with any make pump specified by the user.

Design features such details as ample floor clearance, large tank cleanouts in both ends, sight gages,



. . . space conservation is one effect

filler and bleeder caps on both ends and oil filters. They can be adapted easily to include special types of equipment to suit individual requirements.

Barrel Finishing Machine

USE REPLY CARD—CIRCLE No. 15

Rampe Mfg. Co., 3320 St. Clair Ave., Cleveland 14, O., announces addition of the model TMK barrel finishing machine to its line of tumbler-mixers. This model has a 200-pound capacity hexagonal steel burring barrel turned at 33 rpm by a ¼-hp, 110-v ac single-phase motor.

Machine is made with antifriction bearings throughout. Automatic slack take-up keeps turntable belt tight. Barrels are furnished either unlined or lined with vinyl plastic for resistance to oil and chemicals. Floor space required is 36 x 19-inches; height, 33 inches.

Transmission Has Brake Motor

USE REPLY CARD—CIRCLE No. 16

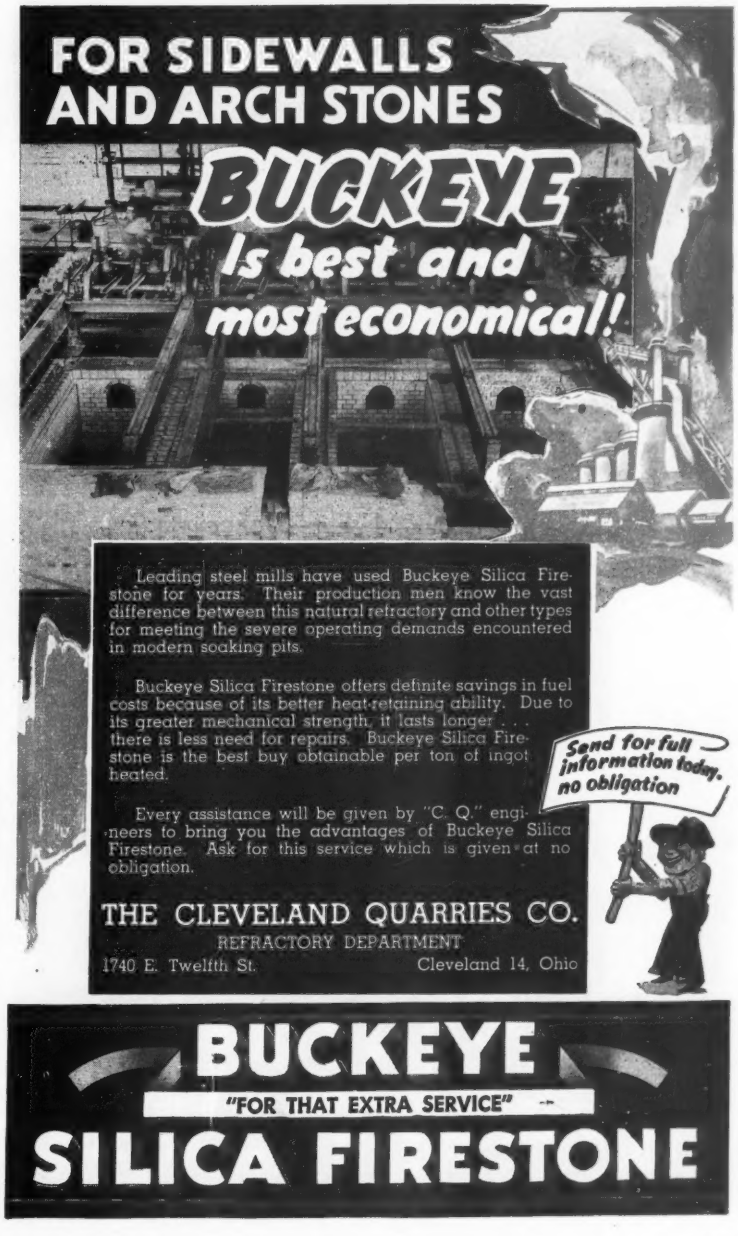
Brake motor available for use with its transmissions in sizes from ¼ to 3 hp is announced by Graham Transmissions Inc., 3754 N. Holton St., Milwaukee 12, Wis. Built-in motor provides immediate stops required in indexing and positioning work.

Unit is a direct acting disk type, having advantages of few parts, smooth and instant action and manufacture without solenoid or mechanical linkage. Motor and brake are connected in parallel. Magnet coils are energized simultaneously with motor starting.

Tools Make 37-Degree Flares

USE REPLY CARD—CIRCLE No. 17

Flaring tools for making 37-degree flares on soft steel, copper, aluminum and fully annealed stainless steel tubing are announced by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BUCKEYE
Is best and most economical!
Leading steel mills have used Buckeye Silica Firestone for years. Their production men know the vast difference between this natural refractory and other types for meeting the severe operating demands encountered in modern soaking pits.
Buckeye Silica Firestone offers definite savings in fuel costs because of its better heat-retaining ability. Due to its greater mechanical strength, it lasts longer . . . there is less need for repairs. Buckeye Silica Firestone is the best buy obtainable per ton of ingot heated.
Every assistance will be given by "C. Q." engineers to bring you the advantages of Buckeye Silica Firestone. Ask for this service which is given at no obligation.
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REFRACTORY DEPARTMENT
1740 E. Twelfth St.
Cleveland 14, Ohio
Send for full information today, no obligation
BUCKEYE
"FOR THAT EXTRA SERVICE"
SILICA FIRESTONE

Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago, Ill. Wide range of tube sizes can be flared with a single tool. One unit, the model 437-F flares six sizes; the other, 537-F, flares four sizes. Latter model has rollers in the flaring cone that facilitate work on larger tube sizes. It also employs an automatic burnishing mechanism that provides a highly polished finish to the flare face after it is formed.

Die holder has heat-treated sliding dies for clamping the tubing. A single lever at the end of the die holder provides for quick clamping. Yoke slides directly over the end of the die holder into position over the tubing to be flared. This makes it possible to operate tool rapidly and easily.

Lift Truck Power Increased

USE REPLY CARD—CIRCLE No. 18

Principal improvements in the Yardlift-150, pneumatic-tired fork lift truck, announced by Clark Equipment Co., Battle Creek, Mich., are increased horsepower, lighter weight and better hydraulic steering. Power plant in the 15,000-pound capacity truck develops more horsepower at fewer revolutions per minute. Weight reduction of 2300 pounds provides increased flotation.

Improved hydraulic steering eases operation for the driver. In the event of motor stoppage, steering can be done mechanically. A separate hydraulic system is used for power steering.

. . . more horsepower at fewer rpm

Other features include fork bars narrowed vertically to increase driver's vision. To aid this cause further, the opening between upright channels and lift cylinders is increased 3½ inches.

Electro-Mechanical Press Stop

USE REPLY CARD—CIRCLE No. 19

Known as Presstop, an electro-mechanical punch press stop is announced by Brinnell Co., Simsbury, Conn. It holds down the treadle or hand lever of a punch press electrically and releases it instantly when operator pushes a stop-button. When operator engages mechanical clutch, a solenoid in the stop is energized, automatically engaging a holding latch that holds treadle or lever for continuous press operation.

Tachometer Kits

USE REPLY CARD—CIRCLE No. 20

Tachometer kits containing all components necessary to provide instantaneous and permanent rec-

Make your own tubes & sections

Whatever the shape or length, and in sizes from ½" to 4½" diam. Henderson Machines will make tubes and sections for you in your own factory at speeds ranging up to 130 feet per minute, dead straight, cut off to your exact requirements and cool enough to handle.

Henderson Machines include:—

Electric Fusion Tube Mills for steel tubes. Atomic Arc Tube Mills for tubes in stainless steel.

Section Rolling Machines for cold rolled section in Ferrous or any other ductile material.

Air Hydraulic Press (4 ton) for Tube manipulation. De-Frazing Machine for the inside and outside ends of tubes.

Please write for full particulars.

Illustration shows a Henderson Atomic Arc Tube Mill for producing stainless steel tubes.

HENDERSON
TUBE MAKING MACHINERY

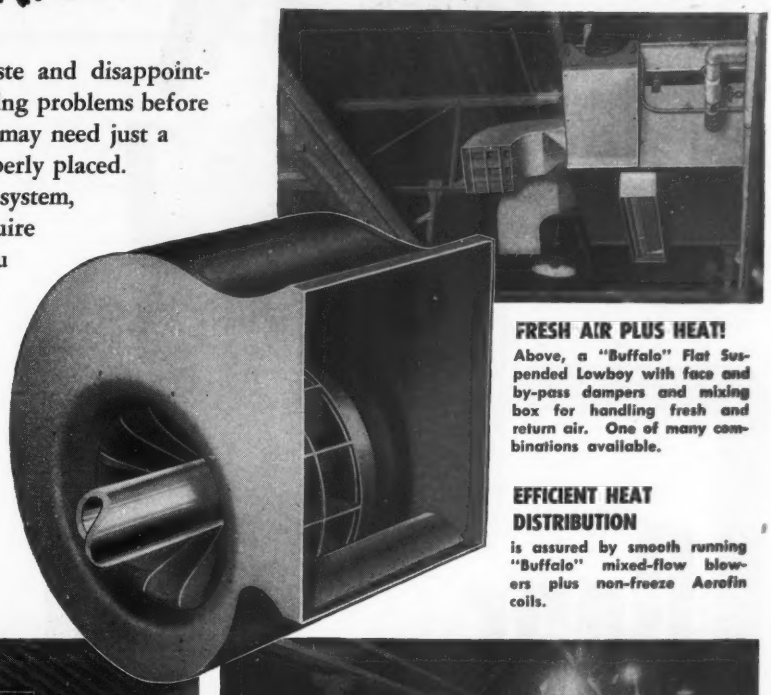
TUBE MAKING MACHINES LTD
BLAENRHONDDA. GLAMORGAN. WALES.
TELEPHONE: TREHERBERT 292/3. TELEGRAMS: TUBEMAC, TREORCHY.

"Buffalo"

Tips on Better HEATING

Pick the RIGHT Unit – NOW!

You can avoid worry, haste and disappointments by solving your heating problems before cold weather comes. You may need just a few small unit heaters, properly placed. You may have an exhaust system, and therefore may require heated make-up air. Or you may have an installation problem, such as cramped space or no available floor space. The pictures here may answer some of your questions, and for further helpful facts, simply write for Bulletin 3704-A.

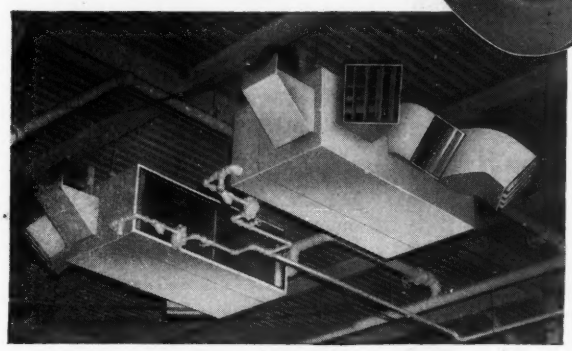


FRESH AIR PLUS HEAT!

Above, a "Buffalo" Flat Suspended Lowboy with face and by-pass dampers and mixing box for handling fresh and return air. One of many combinations available.

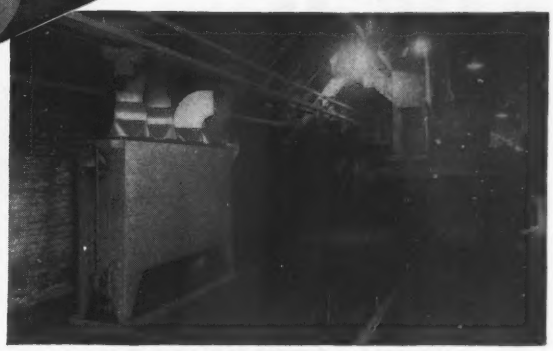
EFFICIENT HEAT DISTRIBUTION

is assured by smooth running "Buffalo" mixed-flow blowers plus non-freeze Aerofin coils.



ABUNDANT HEAT — NO FLOOR SPACE USED

"Buffalo" Lowboy Heaters can be inexpensively mounted overhead to heat entire large production or warehouse areas. Here is a dual installation. Note directional outlets.



LONG, NARROW SPACE-SAVER READY TO THROW QUICK HEAT

"Buffalo" Highboy Heaters are ideal for wall mounting, as in steel mill and other industrial service. Note bearings recessed in dished bowl for handy outside lubrication.

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STANDARD, INVOLUTE 14½° P. A. CARRIED IN STOCK FOR QUICK DELIVERY

SPECIALS — CUTTERS FROM 1 D. P. FOR ROUGHING OR FINISHING • GANGS FOR COMBINING BOTH OPERATIONS • GROUND OR UNGROUND • STOCKING CUTTERS, STEPPED OR ALTERNATE-STEPPED TOOTH STYLE

COMPLETE GEAR CUTTING SERVICE
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BARBER-COLMAN COMPANY
888 ROCK STREET
ROCKFORD, ILLINOIS

ords of machine performance at a central location are announced by General Electric's Meter & Instrument Department, Schenectady 5, N. Y. Four kits are available. They are suited for use in process industries such as steel and aluminum rolling.

Sump Pump Motor

USE REPLY CARD—CIRCLE No. 21

Hoover Co., Kingston-Conley Division, N. Plainfield, N. J., offers a sump pump motor. Cool-running, these 1/3-hp, split phase units are drip-proof and meet all NEMA mounting dimensions. Features include a built-in float switch, rigid coupling and 8-foot rubber covered cord and plug.

Aluminum Antirust Paint

USE REPLY CARD—CIRCLE No. 22

Known as PCA-102, an aluminum antirust paint is announced by Paint Corp. of America, Cleveland 14, O. It is made of doubly pigmented aluminum mixed with a clear base vehicle. Because of the clear antirust base, paint can be easily applied without any possibility of base bleeding through. It can be applied by brush or spray over rust without priming, scraping, wire brushing or sandblasting.

Silver Brazing Flux

USE REPLY CARD—CIRCLE No. 23

G-B No. 99, a silver brazing flux with ability to climb and spread over entire joint area, is offered by Goldsmith Bros. Smelting & Refining Co., Chicago 36, Ill. It is recommended for use with silver solder having a melting range of 1145-1300° F.

Reusable Couplings

USE REPLY CARD—CIRCLE No. 24

A line of couplings developed by Lincoln Engineering Co., St.

USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

72. Cable Conveyor Systems

Daigle-Gaboury, Inc. — Described and illustrated in 4-page folder is this company's cable conveyor system which increases production rates, reduces materials handling costs and fits all standard trolley centers. Features of the system and specifications and parts are covered.

73. Pushbutton Controls

Arrow-Hart & Hegeman Electric Co.—12-page illustrated bulletin "For Dependable Performance" explains how oil tight interchangeable pushbutton controls can be applied to industrial uses. Standard, extended and mushroom button; two and three position selector; and pilot light type units are described. Also detailed are available types of contact arrangements.

74. Pallet Stacking Trucks

Automatic Transportation Co.—All the information you will need on the suspended load type Transtacker industrial trucks, including specifications and engineering diagrams, is found in 2-page illustrated data sheet No. ST-505. Four telescopic and single-lift models of 101 series of driver-led units are covered.

75. Metallic Stearates

American Cyanamid Co., Industrial Chemicals Div.—Revised specifications of many grades of metallic stearates resulting from recent research by the company in the stearate field are included in the booklet "Cyanamid Metallic Stearates." Revisions include controls on purity and uniformity of the component fatty acids and extremely low limits of lead and arsenic. Product uses are given.

76. Power Fuses

Westinghouse Electric Corp.—Line of power fuses for short-circuit protection is described in 6-page illustrated booklet B-5469. Type BA De-Ion boric acid, DBA drop-out and BAL current-limiting fuses are covered in three respective sections, and ratings, construction, operating characteristics and applications are presented for each type.

77. Terminals Without Solder

Aircraft-Marine Products, Inc. — Quality control of the entire solderless wire termination process is subject of 12-page illustrated bulletin "A-MP Quality Control." How, through proper design and manufacture of A-MP solderless terminals and tools, effective quality control is maintained right through final inspection of the installed terminals is discussed.

78. Fork Lift Trucks

Buda Co.—Three illustrated 4-page bulletins 1579, 1580 and 1581 list specifications and operating data on line of 3000 and 4000-lb capacity gasoline and diesel engine powered fork lift trucks.

79. Laboratory Techniques

Baird Associates, Inc.—"Better Analysis" is published periodically for research and laboratory executives. Current issue Vol. 3 No. 1 describes direct reading spectrometer laboratory at American Brass Co., comparison of analytical methods, details of new direct reader, flame photometry, infrared accesories and other data.

80. Processing Ovens

Detroit Sheet Metal Works—Photographs of various types of DSM ovens, including vertical core, mold drying, rolling drawer, continuous heat treating, cabinet and batch type, along with brief descriptions of each, are included in 6-page brochure. Information on other products, such as heaters and dipping machines, grinding and spray booths and washing machines, can be found in the brochure.

STEEL 8-25-52
Penton Building, Cleveland 13, Ohio

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81. Filters

Dollinger Corp.—Who doesn't have dust or other foreign matter to remove from air? If you send for 8-page illustrated bulletin 100 on Staynew ventilation and air conditioning filters, you get the specifications, engineering and performance data covering various types of filters recommended for removal of dust, etc., by the impingement method. Use is made of photos and diagrams, and some data is in graph form.

82. Overhead Handling

American Monorail Co.—56-page illustrated bulletin C-1 is guide book to the proper selection and application of overhead handling equipment. Advantages of twin-section track, one-piece track hangers, heavy web thickness, overlapping splice, rubber wheel drive, compact elctrification and narrow flanges are covered. Typical installations of overhead handling systems in all types of industries are shown.

83. Steel Rock Bits

Drill Bit & Tool Co.—If you use rock bits, you should have available for ready reference this bulletin, "You Can Drill at Less Cost with Midland Throwaway Bits." It details forged steel rock bits in three socket series and seven types of hollow steel drill rods. Illustrations show types and features. Bit sizes described in 4-page catalog V-1708 range from 1¼ to 2⅜ in. and are either center or single side hole type.

84. Sealing Corrugated Boxes

Hinde & Dauch Paper Co.—Volume No. 1 of the Little Packaging Library is 18-page illustrated pocket-size booklet that tells "How To Seal Corrugated Shipping Boxes." Covered are the four commonly used sealing methods employing adhesives, gummed tape, staples or stitches and wire or strap. When each method should be used and how it should be done is explained.

85. Ovens & Spray Finishing

Burdett Mfg. Co.—Ovens, heaters, air make-up units, spray booths and washers are described briefly in 12-page illustrated catalog which covers sheet metal designing and production facilities of this company.

86. Centralized Instrumentation

Minneapolis-Honeywell Regulator Co., Brown Instruments Div.—32-page well illustrated bulletin 85-20, entitled "Centralized Instrumentation Unlimited" is descriptive of conventional and graphic type panelboards. Bulletin covers pneumatic and electric transmission, receivers, valve position and level indicators, controllers, typical control systems, panelboards and panel engineering.

EDITORIAL REPRINTS:

87. Plant Tours Pay Off

A super-salesman, a hard-hitting, aggressive seller that drives your story home and clinches it—that's what a well prepared plant tour is, according to STEEL reprint entitled "Companies Seek Company: Plant Tours Pay Off." Article points to advantages of this type of public relations, tells what it takes to conduct a tour and details the steps that will make it a success.

88. Weld Inspection

"Isotopes Aid Weld Inspection" is title of STEEL reprint which describes the technique employed by Linde Air Products Co. for harnessing the energy of cobalt 60 for radiographic inspection of welds, forgings and castings. Method includes precise exposure calculations, safe operator procedure and costs much less than radium or radon gas techniques.

89. Shaping Boiler Plates

STEEL reprint "Thicker Boiler Plate Formed Faster" describes the heavy press equipment for shaping boiler drum plate and a method of forming heavy wall forgings by piercing and drawing an ingot. Method used at Babcock & Wilcox Co. soon may benefit nation's entire metalworking industry.

90. Temperature Standardization

Keeping pace with industry's demands for accurate measuring devices, the National Bureau of Standards is extending its temperature standardization toward the extremes of the scale. R. E. Wilson of NBS, in STEEL reprint entitled "Temperature Standardization: Big Gains in Research," discusses some applications that call for extreme temperature measurement and some of the instruments that are doing the job.

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Louis, Mo., can be reused wherever there are flexible hose lines. Features include lock-Tite positive grip, easier assembly and larger volume flow.

Bronze Needle Valve

USE REPLY CARD—CIRCLE No. 25

Gland-type bronze needle valve, announced by Lunkenheimer Co., Cincinnati, O., is for use in pinpoint control on small lines where fine regulation of flow is essential. It is made in a full range of sizes from ⅛ to 1-inch in both globe and angle patterns.

Cleans Aluminum, Magnesium

USE REPLY CARD—CIRCLE No. 26

Cleaning of aluminum, anodized aluminum and magnesium parts in power washing equipment is possible with development of a detergent by Kelite Products Inc., Los Angeles 12, Calif. Known as PWB No. 81, it is a powder that is readily soluble in water. It is nonfoaming and noncorrosive.

Wheel Dresser

USE REPLY CARD—CIRCLE No. 27

For precision trueing and facing of grinding wheels, Monarch Machine Shop Inc., Madison, Wis., offers the Red Flash wheel dresser. It will dress wheels up to 2¼ inches wide. The diamond provided can dress hard grinding wheels of 8-inch diameter by 1-inch face.

Indicator Snap Gage

USE REPLY CARD—CIRCLE No. 28

For checking splined shafts, an indicator snap gage is introduced by Vinco Corp., Detroit 28, Mich. It checks only the actual (dimensional) tooth thickness, at or near the pitch diameter. Variations in tooth thickness are read on the dial indicator.

USE A **REPLY CARD**

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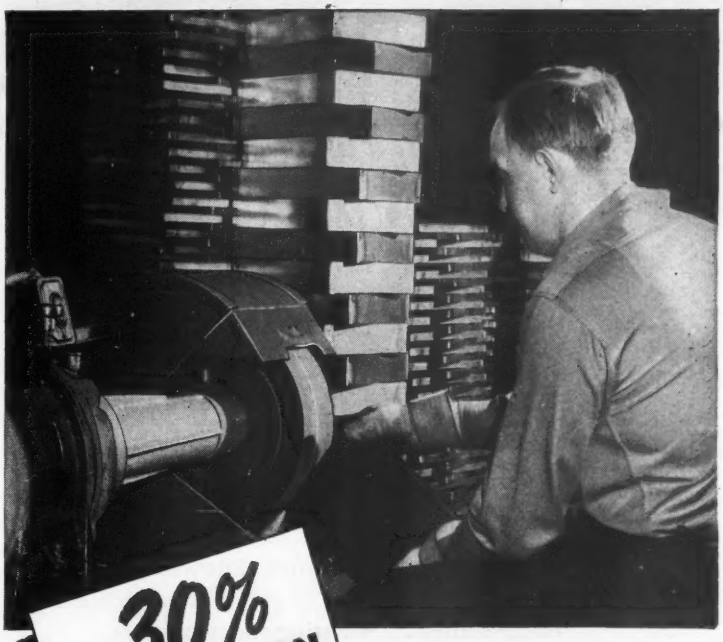

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BY SWITCHING TO JEWEL BRAND resin bonded abrasive belts, a manufacturer of cold rolled steel boxes for tools, first aid kits, electronic parts and similar equipment, made production savings of 30% in removing welding beads.

SAVINGS LIKE THESE are possible because properly chosen Jewel Brand Belts cut faster, last longer. And all Jewel Brand Coated Abrasive Belts have the exclusive *Velvet Joint* that eliminates bumping, adds many hours of productivity.

HELP YOURSELF TO SIMILAR SAVINGS by making the simple Waste Barrel Test. Send us a letter size sample (preferably including the joint) of a used belt taken from your waste barrel. In most cases, Jewel Brand Engineers can recommend a Jewel Brand Coated Abrasive Belt that will save time and money for you! No obligation of any kind.

Fill in coupon and send with used belt sample.

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Sure, we want to cut production costs! Enclosed is sample of used belt from our plant.

NAME.....

POSITION.....

COMPANY.....

TYPE OF PRODUCT..... MATERIAL.....

WE USE APPROXIMATELY..... BELTS PER MONTH.....

BELT LENGTH..... BELT WIDTH.....

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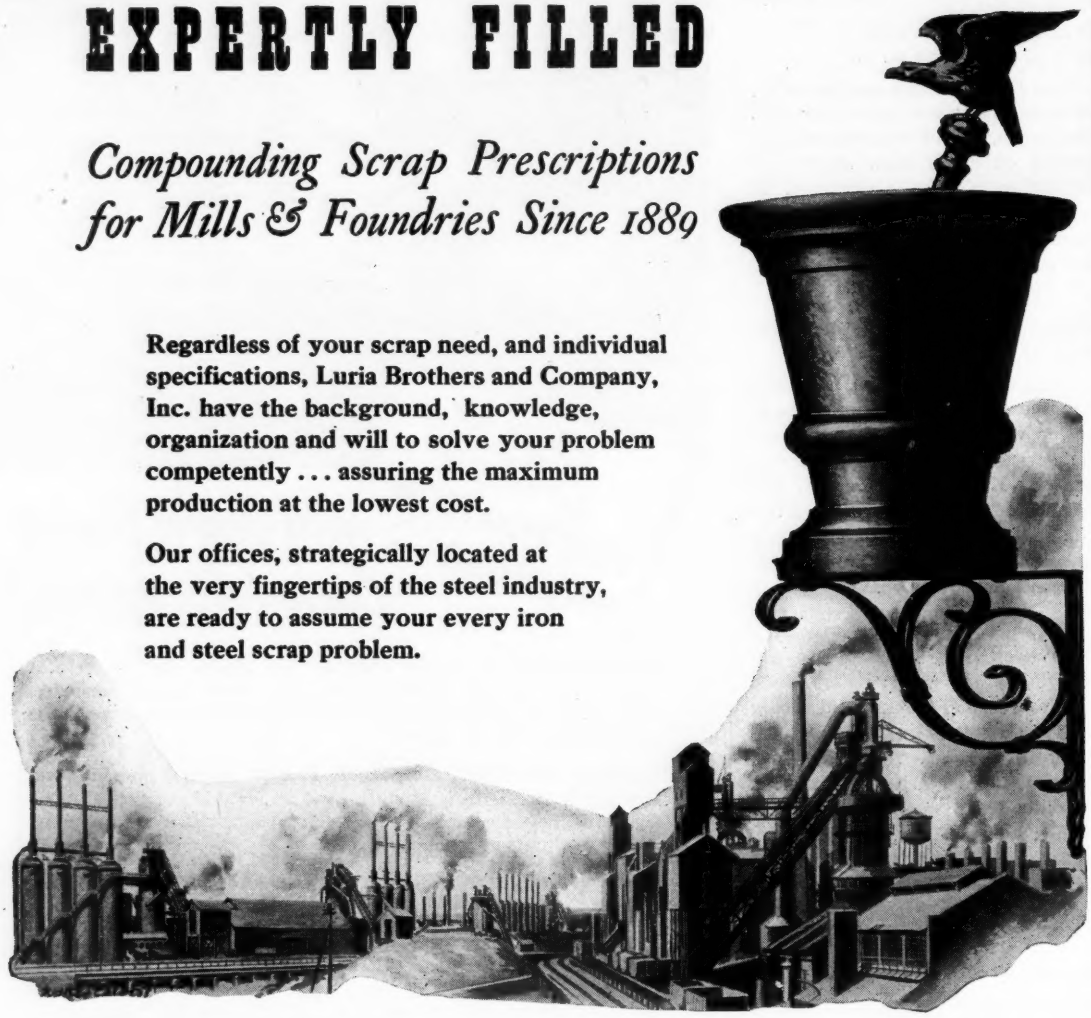
Compounding Scrap Prescriptions for Mills & Foundries Since 1889



Regardless of your scrap need, and individual specifications, Luria Brothers and Company, Inc. have the background, knowledge, organization and will to solve your problem competently . . . assuring the maximum production at the lowest cost.

Our offices, strategically located at the very fingertips of the steel industry, are ready to assume your every iron and steel scrap problem.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

The Market Outlook

RELAXATION of government restrictions on distribution and use of steel, copper and aluminum looks like a good bet for as soon as the first quarter of 1953, with complete revocation of the controls in the second quarter.

A big push is on to get rid of the Controlled Materials Plan. The drive started before the steelworkers' strike but then the tight demand-supply situation in copper was a hindrance. Now copper and aluminum demand is approaching, if not already at, a balance with supply, and steel has made a miraculous recovery from the strike.

SPEED-UP—Preference to military needs for steel is being given by the steel industry to such on extent that it appears military orders which accumulated during the two-months strike will be filled by Sept. 30, rather than Nov. 30 as the industry promised when the strike ended.

Completion of the job 60 days ahead of schedule should be good proof that industry can and will take care of the defense program. Such proof, along with improvement in the copper and aluminum demand-supply picture, should be good leverage for pushing controls out of existence.

OPEN END CMP—It's possible the government mobilization officials could decide to "open end" CMP in the first quarter of next year. Open ending would permit available controlled materials to be bought and sold without CMP permission if at the expiration of lead time for ordering there is open space on mill schedules. While the present plan is to hold fourth-quarter allotment of steel to 80 per cent of the third quarter it is now expected that an additional allotment will be available for December delivery.

A number of manufacturers already have been told they need no longer reduce their use of aluminum and copper. The construction industry will be informed that a plan to ease shackles and to permit some amusement construction will be effective some time in the first quarter.

POINTING THE WAY—The controls picture could change over night if the cold war should heat up, but all in all the signs now point to a swing away from controls early in 1953.

Meanwhile, there's a scramble for steel to fill the gap caused by the steel strike. A number of companies are sending buyers to Europe to look into the steel procurement possibilities.

VARIATIONS—The pinch on supply of steel doesn't extend across all products. Fairly early delivery can be had on wire, straight chromium steel sheets and some grades of silicon sheets. Clad plate deliveries are improved.

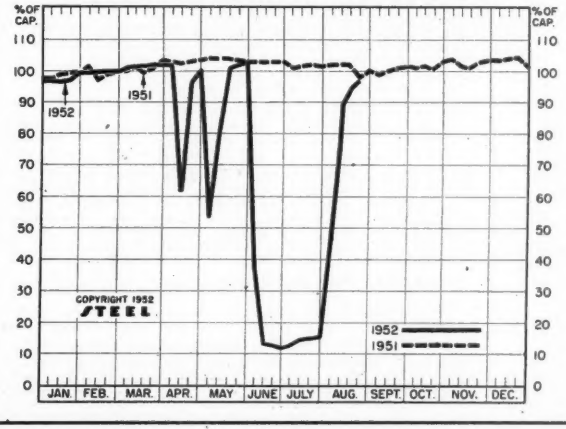
Right at the top of the "tight supply" list are hot-rolled and cold-finished carbon steel bars. They're in big demand for the defense program. Ranking near bars are heavy and wide plates, also vital to defense. Included are silicon plates, which come usually in heavy gages for atomic and various types of heavy pressure work. Demand for structural shapes is limited by government restrictions on construction but the government expects the steel supply to improve enough that the curbs can be relaxed before the end of this year. Carbon sheets are in strong demand, particularly from auto makers.

A CONCESSION—To help consumers obtain steel, the government authorized them to buy up to 500 tons of finished conversion steel per quarter during the last quarter of this year and the first quarter of next year without regard to their allotments.

As the steel industry strove to fill all the demands for steel it raised its production of steel for ingots and castings in the week ended Aug. 23 to 97 per cent of capacity, 2.5 points over the week before.

NEW PRICE TAGS—Steel companies last week were posting price increases authorized by the government to help compensate for a wage increase to steelworkers. STEEL's weighted index on finished steel is now 181.40, subject to revision when additional price schedules are issued. For the last year the index has been 171.92.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Aug. 23	Change	Same Week 1951	Same Week 1950
Pittsburgh	97	+ 6.5*	98	101.5
Chicago	98.5	+ 0.5*	104	75
Mid-Atlantic	91	+ 4	100.5	98.5
Youngstown	106	+ 16	101	106
Wheeling	93.5	+ 4.5*	98.5	97
Cleveland	103	+ 3*	104.5	66
Buffalo	104	— 5	27.5	104
Birmingham	97	0	100	100
New England	92	+ 12	89	87
Cincinnati	50	0	101	103
St. Louis	104	0	93	89
Detroit	106	+ 2.5*	106	106
Western	103.5	+ 1	105	103.5
Estimated national rate	97	+ 2.5	98	90

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 55 Production-Engineering News—p. 91

Composite Market Averages

	Aug. 21 1952†	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100) ..	181.40†	171.92	171.92	171.92	120.39
Index in cents per lb.	4.914†	4.657	4.657	4.657	3.261
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$113.23†	$106.32	$106.32	$106.32	$75.41
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	52.54	37.06
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	36.56
Malleable Pig Iron, GT ...	53.27	53.27	53.27	53.27	37.41
Steelmaking Scrap, GT ...	43.00	43.00	42.67	44.00	37.91

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL Sept. 19, 1949, p.54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Preliminary.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Aug. 21 1952†	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.70	3.70	3.70	2.90
Bars, H.R., Chicago	3.95	3.70	3.70	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.252	4.252	4.20	3.28
Bars, C.F., Pittsburgh	4.925	4.55	4.55	4.55	3.55
Shapes, Std., Pittsburgh ..	3.85	3.65	3.65	3.65	2.80
Shapes, Std., Chicago	3.85	3.65	3.65	3.65	2.80
Shapes, del., Philadelphia ..	4.13	3.93	3.93	3.91	2.94
Plates, Pittsburgh	3.90	3.70	3.70	3.70	2.95
Plates, Chicago	3.90	3.70	3.70	3.70	2.95
Plates, Coatesville, Pa. ...	4.35	4.15	4.15	4.15	3.15
Plates, Sparrows Point, Md.	3.90	3.70	3.70	3.70	2.95
Plates, Claymont, Del.	4.35	4.15	4.15	4.15	3.15
Sheets, H.R., Pittsburgh ..	3.775	3.60–75	3.60–75	3.60–75	2.80
Sheets, H.R., Chicago	3.775	3.60	3.60	3.60	2.80
Sheets, C.R., Pittsburgh ..	4.575	4.35	4.35	4.35	3.55
Sheets, C.R., Chicago	4.575	4.35	4.35	4.35	3.55
Sheets, C.R., Detroit	4.775	4.55	4.55	4.55	3.70
Sheets, Galv., Pittsburgh ..	5.075	4.80	4.80	4.80	3.90
Strip, H.R., Pittsburgh ...	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.50	3.50	3.50	2.80
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	4.90	4.90	4.90	3.65
Strip, C.R., Detroit	5.30-5.60	4.85-5.60	4.85-5.60	4.85-5.60	3.70
Wire, Basic, Pittsburgh ...	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.675
Nails, Wire, Pittsburgh ...	5.90-6.20	5.90-6.20	5.90-6.20	5.90-6.20	4.25
Tin plate box, Pittsburgh..	$8.95	$8.70	$8.70	$8.70	$5.75

SEMIFINISHED

Billets, forging, Pitts. (NT)	$70.50	$66.00	$66.00	$66.00	$56.50
Wire rods, ⅜-⅝", Pitts...	4.325	4.10–30	4.10–30	4.10–30	2.925

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$37.00
Basic, Valley	52.00	52.00	52.00	52.00	36.00
Basic, del. Phila.	56.75	56.75	56.75	56.49	38.72
No. 2 Fdry, Pitts.	52.50	52.50	52.50	52.50	36.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	52.50	36.00
No. 2 Fdry, Valley	52.50	52.50	52.50	52.50	36.50
No. 2 Fdry, del. Phila. ...	57.25	57.25	57.25	56.99	39.22
No. 2 Fdry, Birm.	48.88	48.88	48.88	48.88	34.88
No. 2 Fdry (Birm.) del. Cin.	56.43	56.43	56.43	55.33	38.25
Malleable, Valley	52.50	52.50	52.50	52.50	36.50
Malleable, Chicago	52.50	52.50	52.50	52.50	36.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	44.00
Ferromanganese, Etna, Pa.	228.00	228.00	188.00	188.00	140.25*

F.o.b. cars, Pittsburgh. †Preliminary.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts..	$44.00	$44.00	$44.00	$45.00	$38.00
No. 1 Heavy Melt, E. Pa...	41.50	41.50	41.50	43.50	37.00
No. 1 Heavy Melt, Chicago.	42.50	42.50	42.50	43.50	38.75
No. 1 Heavy Melt, Valley..	44.00	44.00	44.00	45.00	39.00
No. 1 Heavy Melt, Cleve...	43.00	43.00	43.00	44.00	37.50
No. 1 Heavy Melt, Buffalo.	43.00	43.00	37.00*	44.00	39.50
Rails, Rerolling, Chicago ..	52.50	52.50	52.50	52.50	46.25
No. 1 Cast, Chicago	48.50	48.50	45.00	49.00†	43.50

* Nominal. † F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl. ..	$14.75	$14.75	$14.75	$14.75	$11.50-12.50
Beehive, Fdry, Connisvl. ..	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	23.00	17.50

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	21.50
Zinc, E. St. Louis	14.00	14.00	15.00	17.50	10.50
Lead, St. Louis	15.80	15.80	15.80	16.80	14.80-14.85
Tin, New York	121.50	121.50	121.50	103.00	80.00
Aluminum, del.	20.00	20.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ..	39.00	39.00	39.00	42.00	33.00
Nickel, refinery, duty paid.	56.50	56.50	56.50	56.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$54.00	$54.50	$55.00	$55.50
NewYork, del.	....	58.28	58.78	....
Newark, del.	57.02	57.52	58.02	58.52
Philadelphia, del.	56.75	57.25	57.75	58.25
Birmingham District				
AlabamaCity, Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward, Ala. W15	48.38	48.88	....	....
Cincinnati, del.	....	56.43	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda, N.Y. W12	52.00	52.50	53.00	....
No. Tonawanda, N.Y. T9	....	52.50	53.00	....
Boston, del.	62.65	63.15	63.65	....
Rochester, N.Y., del.	55.02	55.52	56.02	....
Syracuse, N.Y., del.	56.12	56.62	57.12	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary, Ind. U5	52.00	....	52.50	....
IndianaHarbor, Ind. I-2	52.00	....	52.50	....
So. Chicago, Ill. W14	52.00	52.50	52.50	....
So. Chicago, Ill. Y1	52.00	52.50	52.50	....
So. Chicago, Ill. U5	52.00	....	52.50	53.00
Milwaukee, del.	54.17	54.67	54.67	55.17
Muskegon, Mich., del.	....	58.80	58.80	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain, O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie, Pa. I-3	52.00	52.50	52.50	53.00
Everett, Mass. E1	....	59.75	60.25	....
Fontana, Calif. K1	58.00	58.50	....	....
Seattle, Tacoma, Wash., del.	....	60.66	....	....
Portland, Oreg., del.	....	60.66	....	....
LosAngeles, SanFrancisco, del. ...	60.16	60.66	....	....
GraniteCity, Ill. G4	53.90	54.40	54.90	....
St. Louis, del. (inc. tax)	54.65	55.15	55.65	....
Ironton, Utah C11	52.00	52.50	....	....
Geneva, Utah C11	52.00	52.50	....	....
LoneStar, Tex. L6	48.00	*48.50	48.50	....
Minnequa, Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	53.87	53.87	54.37
McKeesRocks, del.	....	53.54	53.54	54.04
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	54.16	54.16	54.66
Verona, Trafford, del.	....	54.69	54.69	55.19
Brackenridge, del.	....	54.95	54.95	55.45
Bessemer, Pa. U5	52.00	....	52.50	53.00
Clairton, Rankin, So. Duquesne, Pa. U5	52.00	....	....	....
McKeesport, Pa. N3	52.00	....	....	53.00
Monessen, Pa. P7	54.00	....	....	....
Sharpsville, Pa. S6	....	....	52.50	53.00
Steelton, Pa. B2	54.00	54.50	55.00	55.50
Swedeland, Pa. A3	56.00	56.50	57.00	57.50
Toledo, O. I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	....
Troy, N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard, O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield, O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion therof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$88.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$66.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton, Pa. B2	60.00
Philadelphia delivered	63.55
Troy, N.Y. R2	60.00

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Semifinished and Finished Steel Products

Mill prices which have been revised retroactively to July 26 are shown in italics. Other prices ar nominal pending issuance of additional official price lists and are those in effect prior to July 26. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ..$79.00
Munhall,Pa. U5 .....*54.00*
Seattle S24 .....73.00
INGOTS, Alloy (NT)
Detroit R7 .....*$57.00*
Fontana,Calif. K1 ....80.00
Houston S5 .....62.00
Midland,Pa. C18 .....64.00
Munhall,Pa. U5 .....*57.00*
Seattle S24 .....80.00
BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....*$59.00*
Clairton,Pa. U5 .....*59.00*
Ensley,Ala. T2 .....*59.00*
Fairfield,Ala. T2 .....*59.00*
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....*59.00*
Johnstown,Pa. B2 .....*59.00*
Lackawanna,N.Y. B2 ....*59.00*
Munhall,Pa. U5 .....*59.00*
So.Chicago,Ill. U5 .....*59.00*
So.Duquesne,Pa. U5 ....*59.00*
Carbon, Forging (NT)
Bessemer,Pa. U5 .....*$70.50*
Buffalo R2 .....*70.50*
Canton,O. R2 .....*70.50*
Clairton,Pa. U5 .....*70.50*
Cleveland R2 .....*70.50*
Conshohocken,Pa. A3 ....*77.50*
Detroit R7 .....*73.50*
Ensley,Ala. T2 .....*70.50*
Fairfield,Ala. T2 .....*70.50*
Fontana,Calif. K1 ....85.00
Gary,Ind. U5 .....*70.50*
Geneva,Utah C11 .....*70.50*
Houston S5 .....74.00
Johnstown,Pa. B2 .....*70.50*
Lackawanna,N.Y. B2 ....*70.50*
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....*70.50*
Seattle B3 .....85.00
So.Chicago R2,U5,W14 ..*70.50*
So.Duquesne,Pa. U5 ....*70.50*
So.SanFrancisco B3 ..85.00
Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$70.00
Buffalo R2 .....*76.00*
Canton,O. R2 .....*76.00*
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ....*82.00*
Detroit R7 .....*79.00*
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....*76.00*
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ....70.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2 ..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....*76.00*
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....*76.00*
So.Chicago R2,U5,W14 ..*76.00*
So.Duquesne,Pa. U5 ....*76.00*
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00
ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....*$87.50*
Canton,O. R2 .....*87.50*
Cleveland R2 .....*87.50*
Fontana,Calif. K1 ....103.00
Gary,Ind. U5 .....*87.50*
Massillon,O. R2 .....*87.50*
So.Chicago,Ill. R2 .....*87.50*
So.Duquesne,Pa. U5 ....*87.50*
SHEET BARS, (NT)
Fontana,Calif. K1 ...$89.00
SKELP
Aliquippa,Pa. J5 .....*$3.65*
Munhall,Pa. U5 .....*3.55*
Warren,O. R2 .....*3.55*
Youngstown R2, U5 ....*3.55*
WIRE RODS
Alton,Ill. L1 .....4.40
AlabamaCity,Ala. R2 ...*4.325*
Buffalo W12 .....4.10
Cleveland A7 .....*4.325*
Donora,Pa. A7 .....*4.325*
Fairfield,Ala. T2 .....*4.325*
Fontana,Calif. K1 ....4.90
Houston S5 .....4.50
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 .....*4.325*
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y. B11.4.10
Pittsburg,Calif. C11 ....*4.975*
Portsmouth,O. P12 .....*4.525*
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 .....*4.325*
SparrowsPoint,Md. B2 ...4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 .....*5.125*
Worcester,Mass. A7 ....*4.625*
SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....*4.675*
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. U5 .....*4.675*
So.Chicago,Ill. U5 .....*4.675*

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ...*3.85*
Aliquippa,Pa. J5 .....*3.85*
Bessemer,Ala. T2 .....*3.85*
Bethlehem,Pa. B2 .....*3.90*
Clairton,Pa. U5 .....*3.85*
Fairfield,Ala. T2 .....*3.85*
Fontana,Calif. K1 .....4.25
Gary,Ind. U5 .....*3.85*
Geneva,Utah C11 .....*3.85*
Houston S5 .....4.05
Ind.Harbor,Ind. I-2 ....*3.85*
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 .....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall, Pa. U5 .....*3.85*
Niles,Calif.(22) P1 .....4.85
Phoenixville,Pa. P4 ....5.90
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14 ..*3.85*
So.SanFrancisco B3 ...4.20
Torrance,Calif. C11 .....*4.45*
Weirton,W.Va. W6 ....3.90
Alloy Stand. Shapes
Clairton,Pa. U5 .....*4.725*
Fontana,Calif K1 .....5.55
Munhall,Pa. U5 .....*4.725*
So.Chicago,Ill. U5 .....*4.725*
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....*5.80*
Bessemer,Ala. T2 .....*5.80*
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....*5.80*
Fairfield,Ala. T2 .....*5.80*
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....*5.80*
Geneva,Utah C11 .....*5.80*
Ind.Harbor,Ind. I-2 ....*5.80*
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....*5.80*
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....*5.80*
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00
Wide Flange
Bethlehem,Pa. B2 .....*3.90*
Clairton,Pa. U5 .....*3.85*
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ....*3.90*
Munhall,Pa. U5 .....*3.85*
So.Chicago,Ill. U5 .....*3.85*
H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 .....*5.75*
So.Chicago,Ill. U5 .....*5.75*
BEARING PILES
Munhall,Pa. U5 .....*3.85*
So.Chicago,Ill. U5 .....*3.85*
PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....*5.95*
Bessemer,Ala. T2 .....*5.95*
Clairton,Pa. U5 .....*5.95*
Cleveland J5, R2 .....*5.95*
Conshohocken,Pa. A3 ....*6.20*
Ecorse,Mich. G5 .....*6.90*
Fairfield,Ala. T2 .....*5.95*
Fontana,Calif.(30) K1 ...6.25
Gary,Ind. U5 .....*5.95*
Geneva,Utah C11 .....*5.95*
Ind.Harbor,Ind. I-2 ....*5.95*
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....*5.95*
Pittsburgh J5 .....*5.95*
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....*5.95*
SparrowsPoint,Md. B2 ...5.65
Warren,O. R2 .....*5.95*
Youngstown Y1 .....6.15
PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....*5.35*
Coatesville,Pa. L7 .....*5.75*
Conshohocken,Pa. A3 ....*5.55*
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....*5.25*
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....*5.25*
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....*5.25*
SparrowsPoint,Md. B2 ...4.75
FLOOR PLATES
Cleveland J5 .....*4.95*
Conshohocken,Pa. A3 ....*4.95*
Ind.Harbor,Ind. I-2 ....*4.95*
Munhall,Pa. U5 .....*4.95*
So.Chicago,Ill. U5 .....*4.95*
PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..3.95
Ashland,c.l. (15) A10 ..4.45
Cleveland,c.l. R2 .....*4.50*
Warren,O.,c.l. R2 .....*4.50*
PLATES, Carbon Steel
AlabamaCity,Ala. R2 ...*3.90*
Aliquippa,Pa. J5 .....*3.90*
Ashland,Ky. (15) A10..3.70
Bessemer,Ala. T2 .....*3.90*
Clairton,Pa. U5 .....*3.90*
Claymont,Del. C22 .....*4.35*
Cleveland J5, R2 .....*3.90*
Coatesville,Pa. L7 .....*4.35*
Conshohocken,Pa. A3 ....*4.35*
Ecorse,Mich. G5 .....*4.45*
Fairfield,Ala. T2 .....*3.90*
Fontana,Calif.(30) K1 ...4.30
Gary,Ind. U5 .....*3.90*
GraniteCity, Ill. G4 ....4.40
Geneva,Utah C11 .....*3.90*
Harrisburg,Pa. C5 .....6.30
Houston S5 .....4.10
Ind.Harbor,Ind. Y1 ....3.70
Ind.Harbor,Ind. I-2 ....*3.90*
Johnstown,Pa. B2 .....*3.90*
Lackawanna,N.Y. B2 ....*3.90*
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....*3.90*
Pittsburgh J5 .....*3.90*
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5, W14 ..*3.90*
SparrowsPoint,Md. B2 ....*3.90*
Steubenville,O. W10 ....3.70
Warren,O. R2 .....*3.90*
Weirton,W.Va. W6 ....4.00
Youngstown Y1 .....3.70
Youngstown R2, U5 .....*3.90*
PLATES, Carbon A.R.
Fontana,Calif. K1 ....5.45
Geneva,Utah C11 .....*5.05*
PLATES, Wrought Iron
Economy,Pa. B14 .....8.60
BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....*3.95*
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....*3.95*
Lackawanna,N.Y. B2 ....*3.95*
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85
BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....*4.15*
BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ....*3.95*
Aliquippa,Pa. J5 .....*3.95*
Alton,Ill L1 .....4.15
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....*3.95*
Buffalo R2 .....*3.95*
Canton,O. R2 .....*3.95*
Clairton,Pa. U5 .....*3.95*
Cleveland R2 .....*3.95*
Detroit R7 .....*4.10*
Ecorse,Mich. G5 .....*4.30*
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....*3.95*
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....*3.95*
Houston S5 .....4.10
Ind.Harbor,Ind. Y1 ....3.70
Ind.Harbor,Ind. I-2 ....*3.95*
Johnstown,Pa. B2 .....*3.95*
KansasCity, Mo. S5 ....4.30
Lackawanna,N.Y. B2 ....*3.95*
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11..3.70
Pittsburg,Calif. C11 ....*4.65*
Pittsburgh J5 .....*3.95*
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2,U5,W14 ..*3.95*
So.Duquesne,Pa. U5 .....*3.95*
So.SanFran.,Cal. B3 ....4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 .....*4.65*
Weirton,W.Va. W6 .....3.85
Youngstown R2, U5 .....*3.95*
BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....*4.675*
Canton,O. R2 .....*4.675*
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....*4.675*
Detroit R7 .....*4.825*
Ecorse,Mich. G5 .....*5.025*
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....*4.675*
Houston S5 .....4.70
Ind.Harbor,Ind. Y1 ....4.30
Ind.Harbor,Ind. I-2 ....*4.675*
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ....4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....*4.675*
Midland,Pa. C18 .....4.30
So.Chicago R2,U5,W14 ..*4.675*
So.Duquesne,Pa. U5 .....*4.675*
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....*4.675*
BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....*4.925*
Gary,Ind. U5 .....*4.925*
Youngstown U5 .....*4.925*
BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....*5.925*
Bessemer,Ala. T2 .....*5.925*
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....*5.925*
Cleveland R2 .....*5.925*
Ecorse,Mich. G5 .....*6.675*
Fairfield,Ala. T2 .....*5.925*
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....*5.925*
Ind.Harbor,Ind. I-2 ....*5.925*
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....*5.925*
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ....*5.925*
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....*5.925*
BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....*4.925*
BeaverFalls,Pa. R2 .....*4.925*
BeaverFalls,Pa. M12 ....4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland C20 .....4.55
Cleveland A7 .....*4.925*
Detroit P17, R7 .....*5.075*
Donora,Pa. A7 .....*4.925*
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 .....*4.925*
GreenBay,Wis. F7 .....*4.925*
Hammond,Ind. L2, M13..4.55
Hartford,Conn. R2 .....*5.475*
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....*6.375*
Mansfield,Mass. B5 ....5.10
Massillon,O. R8 .....4.55
Massillon,O. R2 .....*4.925*
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....*5.375*
Plymouth,Mich. P5 ....4.80
Pittsburgh J5 .....*4.925*
Putnam,Conn. W18 .....*5.475*
Readville,Mass. C14 ....5.10
St.Louis,Mo. M5 .....*5.30*
So.Chicago,Ill. W14 .....*4.925*
SpringCity,Pa.(5) K3 ...5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....*4.925*
Youngstown F3, Y1 .....4.55
BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....*6.00*
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....*6.00*
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....*6.05*
Cleveland C20 .....5.40
Detroit P17, R7 .....*6.15*
Donora,Pa. A7 .....*6.05*
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....*6.00*
Hammond,Ind. L2, M13..5.40
Hartford,Conn. R2 .....*6.45*
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ...5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R8 .....5.40
Massillon,O. R2 .....*6.00*
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....*6.75*
Plymouth,Mich. P5 ....5.60
So.Chicago,Ill. R2, W14 ..*6.00*
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....*6.05*
Worcester,Mass. A7 .....*6.25*
Youngstown F3, Y1 ....5.40
RAIL STEEL BARS
ChicagoHts.(3,4) C2 ....4.75
ChicagoHts.(3,4) I-2 ....4.75
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7..5.80
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....*4.05*
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10
BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ....13.50
Dover(Wrght.Iron) U1 ..12.25
Economy,Pa.(S.R.) B14..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00
Cleveland R2 .....*3.95*
Emeryville,Calif. J7 ....4.40
Fairfield,Ala. T2 .....*3.95*
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....*3.95*
Houston S5 .....4.10
Ind.Harbor,Ind. Y1 ....3.70
Ind.Harbor,Ind. I-2 ....*3.95*
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.50
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ....*4.65*
Pittsburgh J5 .....*3.95*
Portland,Oreg. O4 .....4.65
SandSprings,Okla. S5 ..4.60
Seattle B3, N14 .....4.45
So.Chicago,Ill. R2 .....*3.95*
So.Duquesne,Pa. U5 ....*3.95*
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 .....*4.65*
Youngstown R2, U5 .....*3.95*
BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ....4.75
Williamsport,Pa. S19 ...5.10
SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ....*3.775*
Ashland,Ky.(8) A10 .....3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....*3.775*
Conshohocken,Pa. A3 ....*4.175*
Detroit M1 .....4.40
Ecorse,Mich. G5 .....*3.975*
Fairfield,Ala. T2 .....*3.775*
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....*3.775*
Geneva,Utah C11 .....*3.875*
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. Y1 ....3.60
Ind.Harbor,Ind. I-2 ....*3.775*
Irvin,Pa. U5 .....*3.775*
Lackawanna,N.Y. B2 ....*3.775*
Munhall,Pa. U5 .....*3.775*
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....*4.475*
Pittsburgh J5 .....*3.775*
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....*3.775*
SparrowsPoint,Md. B2 ....*3.775*
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 .....*4.475*
Warren,O. R2 .....*3.775*
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa.A4 ...3.75
Youngstown Y1 .....*3.60*
Youngstown U5 .....*3.775*
SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ....*4.925*
Dover,O. R1 .....5.65
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 .....*5.575*
SHEETS, H.R. (14 ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 .....*5.675*
Conshohocken,Pa. A3 ....5.65
Ecorse,Mich. G5 .....*6.225*
Fairfield,Ala. T2 .....*5.675*
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....*5.675*
Ind.Harbor,Ind. I-2 ....*5.675*
Ind.Harbor,Ind. Y1 ....5.90
Irvin,Pa. U5 .....*5.675*
Lackawanna(35) B2 ...5.40
Pittsburgh J5 .....*5.675*
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....*5.675*
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....*5.675*
Weirton,W.Va. W6 ....5.75
Youngstown U5 .....*5.675*
Youngstown Y1 .....5.90
SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 .....*6.925*
Ecorse,Mich. G5 .....*7.475*
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....*6.925*
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2 ..*6.925*
Irvin,Pa. U5 .....*6.925*
Lackawanna(37) B2 ....6.55
Pittsburgh J5 .....*6.925*
SparrowsPoint(38) B2 ...6.55
Warren,O. R2 .....*6.925*

Weirton,W.Va. W6 ....6.90
Youngstown Y1 .....7.05

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.95
Atlanta A11 .....4.25
Buffalo R2 .....3.95

SHEETS, Cold-Rolled Steel (Commercial Quality)
Butler,Pa. A10 .....4.35
Cleveland J5, R2 .....4.575
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 .....4.575
Follansbee,W.Va. F4 ...5.35
Fontana,Calif. K1 ....5.30
Gary,Ind. U5 .....4.575
GraniteCity,Ill. G4 ....5.05
Ind.Harbor,Ind. Y1 ....4.35
Ind.Harbor,Ind. I-2 ....4.575
Irvin,Pa. U5 .....4.575
Lackawanna,N.Y. B2 ....4.575
Middletown,O. A10 .....4.35
Pittsburg,Calif. C11 ....5.525
Pittsburgh J5 .....4.575
SparrowsPoint,Md. B2 ....4.575
Steubenville,O. W10 ....4.35
Warren,O. R2 .....4.575
Weirton,W.Va. W6 ....4.35
Youngstown Y1 .....4.35

SHEETS, Galv'd No. 10 Steel
AlabamaCity,Ala. R2 ...5.075
Ashland,Ky.(8) A10 ....4.80
Canton,O. R2 .....5.075
Dover,O. R1 .....5.50
Fairfield,Ala. T2 .....5.075
Gary,Ind. U5 .....5.075
GraniteCity,Ill., G4 ....5.50
Ind.Harbor,Ind. I-2 ....5.075
Irvin,Pa. U5 .....5.075
Kokomo,Ind. (13) C16 ...5.20
MartinsFerry,O. W10 ....4.80
Niles,O. N12 .....6.00
Pittsburg,Calif. C11 ....5.825
SparrowsPoint,Md. B2 ....5.075
Steubenville,O. W10 ....4.80
Torrance,Calif. C11 ....5.825
Weirton,W.Va. W6 ....4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy
Irvin,Pa. U5 .....7.625
SparrowsPoint(39) B2..6.75

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.625
Irvin,Pa. U5 .....5.625
Kokomo,Ind.(13) C16 ..5.75
Niles,O. N12 .....6.55

SHEETS, ZINCGRIP Steel No. 10
Butler,Pa. A10 .....5.05
Middletown,O. A10 ....5.05

SHEETS, Electro Galvanized
Cleveland R2 (28) 5.925
Niles,O. R2 (28) 5.925
Weirton,W.Va. W6 ....5.50

SHEETS, Drum Body
Pittsburg,Calif. C11 ....4.475
Torrance,Calif. C11 ....4.475

SHEETS, Well Casing
Fontana,Calif. K1 .....5.10

BLUED Stock, 29 ga.
Yorkville,O. W10 .....6.80
Follansbee,W.Va.(23)F4 6.85

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ....4.65
Cleveland R2 .....4.925
Gary,Ind. U5 .....4.925
GraniteCity,Ill. G4 ....5.35
Ind.Harbor,Ind. I-2 ....4.925
Irvin,Pa. U5 .....4.925
Middletown,O. A10 .....4.65
Youngstown Y1 .....4.65

BLACK PLATE (Base Box)
Aliquippa,Pa. J5 .....$6.25
Fairfield,Ala. T2 .....6.60
Gary,Ind. U5 .....6.50
GraniteCity,Ill. G4 ....6.45
Ind.Harbor,Ind. I-2 ....6.50
Ind.Harbor,Ind. Y1 ....6.25
Irvin,Pa. U5 .....6.50
Niles,O. R2 .....6.50
Pittsburg,Calif. C11 ....7.25
SparrowsPoint,Md. B2 ..6.60
Warren,O. R2 .....6.50
Weirton,W.Va. W6 ....6.25
Yorkville,O. W10 .....6.25

HOLLOWARE ENAMELING Black Plate (29 gage)
Follansbee,W.Va. F4 ...5.85
Gary,Ind. U5 .....6.10
GraniteCity,Ill. G4 ....6.05
Ind.Harbor,Ind. Y1 ....5.85
Irvin,Pa. U5 .....6.10
Yorkville,O. W10 .....6.15

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.60	...
Canton,O. R2	*5.925*	*6.375*
Fairfield,Ala. T2	*5.875*	*6.125*
Gary,Ind. U5	*5.875*	*6.125*
IndianaHarbor I-2	*5.875*	*6.125*
Irvin,Pa. U5	*5.875*	*6.125*
Kokomo,Ind. C16.	6.25	...
MartinsFy.O. W10	5.60	5.85
Pittsburg,Cal. C11	*6.625*	
SparrowsPt. B2..	5.60	...
Torrance,Cal. C11	*6.625*	

SHEETS, Culvert, No. 16 Pure Iron
Ashland,Ky. A10 .....5.85
Fairfield,Ala. T2 .....6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier
Ashland,Ky.(8) A10 ....3.85
Cleveland R2 .....4.375
Ind.Harbor,Ind. I-2 ....4.025
Warren,O. R2 .....4.375

SHEETS, Cold-Rolled Ingot Iron
Cleveland R2 .....5.175
Middletown,O. A10 .....4.85
Warren,O. R2 .....5.175

SHEETS, Galvanized Ingot Iron No. 10 flat
Ashland,Ky.(8) A10 ....5.05
Canton,O. R2 .....5.825

SHEETS, ZINCGRIP Ingot Iron
Butler,Pa. A10 .....5.30
Middletown,O. A10 .....5.30

SHEETS, ALUMINIZED
Butler,Pa. A10 .....8.15

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	*$7.40*	*$7.65*	*$8.05*
Fairfield,Ala. T2	*7.50*	*7.75*	*8.15*
Gary,Ind. U5	*7.40*	*7.65*	*8.05*
GraniteCity,Ill. G4	7.35	7.60	8.00
IndianaHarbor,Ind. I-2, Y1	*7.40*	*7.65*	*8.05*
Irvin,Pa. U5	*7.40*	*7.65*	*8.05*
Niles,O. R2	*7.40*		
Pittsburg,Calif. C11	*8.15*	*8.40*	*8.80*
SparrowsPoint,Md. B2	*7.50*	*7.75*	*8.15*
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	...	7.95	9.20	...
IndianaHarbor,Ind. I-2	*7.55*	*7.85*	*(34)*	*(41)*	...
Mansfield,O. E6 (cut lengths).	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	...	6.75	7.25	...
Vandergrift,Pa. U5			*7.85*	*8.35*	*9.60* *10.40*
Warren,O. R2	*7.55*		*7.85*	*8.35*	*9.60* *10.40*
Zanesville,O. A10	...		7.25	7.75	9.00 9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	*10.95*	*11.50*	*12.20*	*13.00*
Warren,O. R2	*10.95*	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	*13.50*	*14.35*	*15.35*	*15.85*

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	*$8.70*	*$8.95*
Fairfield,Ala. T2	*8.80*	*9.05*
Gary,Ind. U5	*8.70*	*8.95*
Ind.Har. I-2, Y1	*8.70*	*8.95*
Irvin,Pa. U5	*8.70*	*8.95*
Pitts.,Cal. C11	*9.45*	*9.70*
Sp.Pt.,Md. B2	*8.80*	*9.05*
Warren,O. R2	*8.70*	
Weirton,W.Va.W6	8.45	8.70
Yorkville,O. W10.	8.45	8.70

MANUFACTURING TERNES (Special Coated)
Fairfield,Ala. T2 .....$7.85
Gary,Ind. U5 .....7.75
Irvin,Pa. U5 .....7.75
SparrowsPoint,Md. B2 ..7.60
Yorkville,O. W10 .....7.50

SHEETS, LT. Coated Ternes, 6 lb
Yorkville,O. W10 .....$8.40

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)
Gary,Ind. U5 .....$9.75
Yorkville,O. W10 .....9.50

SHEET, Long Terne Steel (Commercial Quality)
BeechBottom,W.Va.W10 5.20
Gary,Ind. U5 .....5.475
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....5.20
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ....5.20

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ....5.00

ROOFING SHORT TERNES (8 lb Coated)
Gary,Ind. U5 .....9.75

STRIP, Hot-Rolled High-Strength Low-Alloy
Bessemer,Ala. T2 .....5.65
Conshohocken,Pa. A3 ....5.90
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.65
Ind.Harb.,Ind. I-2 .....5.65
Ind.Harbor,Ind. Y1 ....5.80
Lackawanna,N.Y. B2 ...4.95
LosAngeles(25) B3 ....6.05
Seattle B3 .....6.30
Sharon,Pa. S3 .....5.40
So.SanFrancisco(25) B3.6.05
SparrowsPoint,Md. B2..4.95
Warren,O. R2 .....5.65
Weirton,W.Va. W6 .....5.75
Youngstown Y1 .....5.80
Youngstown U5 .....5.65

STRIP, Cold-Rolled High-Strength Low-Alloy
Cleveland J5 .....7.45
Cleveland A7 .....7.30
Dover,O. G6 .....7.30
Ecorse,Mich. G5 .....8.15
Fontana,Calif. K1 .....6.95
Lackawanna,N.Y. B2 ..6.40
Sharon,Pa. S3 .....6.55
SparrowsPoint,Md. B2 ..6.40
Warren,O. R2 .....7.30
Weirton,W.Va. W6 .....7.20
Youngstown Y1 .....7.05

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(27) R2 ...3.725
Alton,Ill. L1 .....3.95
Ashland,Ky.(8) A10 ....3.50
Atlanta A11 .....4.05
Bessemer,Ala. T2 .....3.725
Bridgeprt,Conn.(10) S15.4.00
Buffalo(27) R2 .....3.725
Butler,Pa. A10 .....3.50
Carnegie,Pa. S18 .....4.00
Conshohocken,Pa. A3 ...4.125
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.025
Fairfield,Ala. T2 .....3.725
Fontana,Calif. K1 .....4.75
Gary,Ind. U5 .....3.725
Houston,Tex. S5 .....4.90
Ind. Harbor,Ind. I-2 ....3.725
Ind.Harbor,Ind. Y1 ....3.50
Johnstown,Pa. (25) B2 .3.50
KansasCity,Mo.(9) S5 ..4.10
Lackawanna,N.Y.(32)B2 3.50
LosAngeles B3 .....4.25
Milton,Pa. B6 .....4.35
Minnequa,Colo. C10 ....4.55
NewBritain(10) S15 ....4.00
No.Tonawanda,N.Y.B11 3.50
Pittsburg,Calif. C11 ....4.475
Riverdale,Ill. A1 .....3.50
SanFrancisco S7 .....4.85
Seattle B3, N14 .....4.50
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.725
So.SanFrancisco B3 ....4.25
SparrowsPoint,Md. B2 ..3.50
Torrance,Calif. C11 ....4.475
Warren,O. R2 .....3.725
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa. A4 .3.75
Youngstown U5 .....3.725
Youngstown Y1 .....3.50

STRIP, Hot-Rolled Alloy
Bridgeprt,Conn.(10) S15.5.45
Carnegie,Pa. S18 .....5.85
Fontana,Calif. K1 .....6.70
Gary,Ind. U5 .....6.10
Houston,Tex. S5 .....5.90
KansasCity,Mo. S5....6.10
Midland,Pa. C18 .....5.85
NewBritn,Conn.(10) S15.5.45
Sharon,Pa. S3 .....5.85
Youngstown U5 .....5.50

STRIP, Cold-Rolled Carbon
Anderson,Ind.(40) G6 ..5.50
Berea,O. C7 .....6.60
Bridgeprt.Conn.(10) S15.5.35
Butler,Pa. A10 .....4.65
Cleveland A7, J5 .....5.10
Dearborn,Mich. D3 ....5.60
Detroit D2 .....5.60
Detroit M1 .....5.45
Dover,O.(40) G6 .....5.50
Ecorse,Mich. G5 .....5.30
Follansbee,W.Va. F4 ...4.65
Fontana,Calif. K1 .....6.30
FranklinPark,Ill.(40)T6 4.90
Ind.Harbor,Ind. I-2 .....5.35
Lackawanna,N.Y. B2 ..4.65
Los Angeles C1 .....6.40
Mattapan,Mass. T6 ....5.60
Middletown,O. A10 ....4.65
NewBritain(10) S15 ...5.35
NewCastle,Pa. B4 ....5.35
NewCastle,Pa.(40) E5 ..5.25
NewHaven,Conn. D2 ...5.85
NewHaven,Conn. A7 ....5.60
Pawtucket,R.I. R3 ....6.00
Pawtucket,R.I.(21) N8..5.85
Riverdale,Ill.(40) A1 ..4.90
Rome,N.Y. R6 .....5.10
Sharon,Pa. S3 .....5.35
SparrowsPoint,Md. B2 .4.65
Trenton,N.J. R5 .....6.00
Wallingford,Conn. W2 ..5.85
Warren,O.(40) T5 .....5.25
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....4.65
Youngstown C8 (40) ...5.25
Youngstown Y1 .....4.65

STRIP, Electro Galvanized
Dover,O. G6 .....5.50
Warren,O. T5 .....5.25
Weirton,W.Va. W6 ....4.65
Youngstown C8 .....5.25

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	....
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	*5.10*	*7.30*	*8.25*	*10.20*	*12.50*
Dearborn,Mich. D3	5.60	7.05	7.65	...	....
Detroit D2	*6.45*	*7.50*	*8.10*	....	....
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison, N. J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	....
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn., D2	*6.70*	*7.60*	*8.20*	....	....
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. NS: Cleve.orPitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Mass.,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	*5.40*	*7.60*	*8.55*	*10.5*	*12.80*
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65

Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30	12.50	15.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
1-7 Indiana Steel&Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S1	0 10.75
Carnegie,Pa. S1	8 10.60
Cleveland A7	*11.40*
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C1	8 10.60
Midland,Pa. C1	8 10.60
NewBritn.Conn.(10)S1	5 10.75
Pawtucket,R.I.(11) N	8 10.75
Pawtucket,R.I.(12) N	8 11.05
Sharon,Pa. S	3 10.60
Worcester,Mass. A7	*11.70*
Youngstown C	8 10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A1	0 3.75
Warren,O. R2	*4.325*

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	*5.70*

TIGHT COOPERAGE HOOP

Atlanta A11	4.05
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown U5	*4.15*

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16 (43)	*11.40*
Roebling,N.J. R5	11.55

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	*6.075*	*6.45**
Crawfordsville M8	5.95	6.40
Donora,Pa. A7	*6.075*	*6.45**
Duluth,Minn. A7	*6.075*	*6.45**
Fairfield T2	*6.075*	*6.45**
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	*6.075*	*6.45**
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	*7.025*	*7.40**
Prtsmth.(18)P12	*6.475*	...
Rankin A7	*6.075*	*6.45**
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	*7.025*	...
Worcester A7	*6.375*	*6.75**

*Based on 14-cent zinc.

ROPE WIRE (A) (B)
(Add 4.7% on base and extras)

Alton,Ill. L1	8.65	8.90
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
Muncie,Ind. I-7	8.75	9.00
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5 (42)	*4.85*
Atlanta A11	5.10
Alton,Ill. L1	5.05
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.85
Chicago W13	5.10
Cleveland C20	4.85
Cleveland A7	*5.225*
Crawfordsville,Ind. M8	5.10
Donora,Pa. A7	*5.225*
Duluth,Minn. A7	*5.225*
Fairfield,Ala. T2	*5.225*
Fostoria,O.(24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	*5.225*
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark 6-8 ga. I-1	5.50
No.Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	*6.175*
Portsmouth,O. P12	*5.625*
Rankin,Pa. A7	*5.225*
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	*6.175*
Waukegan,Ill. A7	*5.225*
Worcester,Mass. T6	5.15
Worcester,Mass. A7	*5.525*

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7 (43)	*5.85*
Crawfordsville,Ind. M8	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	5.85
Monessen,Pa. P16 (43)	*6.35*
Monessen,Pa. P7	6.10
Pawtucket,R.I.(12) N8	6.85
Trenton,N.J. R5	6.15
Worcester,Mass. A7 (43)	*6.15*
Worcester,Mass. T6	6.50
Worcester,Mass. W12	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.50
Monessen,Pa. P16 (43)	*8.50*
Muncie,Ind. I-7	8.70
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.60
Johnstown,Pa. B2	8.50

WIRE (16 gauge)

	Anl'd.	Galv. Stone
(Add 4.7% on base and extras)		
Aliquippa J5	10.15	12.15
Bartonville(1)K4	10.25	11.95
Cleveland A7	*10.25*	*12.00**
Crawfrdsville M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	11.95
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass. W12	10.25	12.15
Pitts.Cal. C11	*10.60*	*12.35**
SparrowsPt. B2	10.35	12.15
Waukegan A7	*10.25*	*12.00**

*Based on 14-cent zinc.

WIRE, MB Spring, High Carbon
(Add 4.7% on base and extras)

Aliquippa,Pa. J5	6.25
Alton,Ill. L1	6.45
Bartonville,Ill.(1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth,Minn. A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass.(12) N6	8.05
Monessen,Pa. P7, P16	6.25
Muncie,Ind. I-7	6.45
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6 25
So.SanFrancisco C10	7.20
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7 (43)	*8.90*
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16 (43)	*8.90*
Muncie,Ind. I-7	9.10
Palmer,Mass. W12	9.20
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. T6	9.20
Worcester,Mass. A7(43)	*9.20*

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	*142*
Atlanta A11	144
Bartonville,Ill.(19) K4	144
Crawfordsville,Ind. M8	146
Donora,Pa. A7	*147**
Duluth,Minn. A7	*147**
Fairfield,Ala. T2	*147**
Houston,Tex. S5	149
Johnstown,Pa. B2	141
Joliet,Ill. A7	*147**
Kansas City,Mo. S5	153
Kokomo,Ind. C16	143
Minnequa,Colo. C10	147
Monessen,Pa. P7	146
Pittsburg,Calif. C11	*167**
Rankin,Pa. A7	*147**
So.Chicago,Ill. R2	137
So.SanFran.,Calif. C10	161
SparrowsPoint,Md. B2	143
Sterling,Ill. (1) N15	141

*Based on 14-cent zinc

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Crawfordsville,Ind. M8	132
Donora,Pa. A7	*132*
Duluth,Minn. A7	*132*
Fairfield,Ala. T2	*132*
Joliet,Ill. A7	*132*
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	*156*
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill. (1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill. L1	6.10
Buffalo W12	5.90
Cleveland A7	*6.275*
Donora,Pa. A7	*6.275*
Duluth,Minn. A7	*6.275*
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7	5.90
Monessen,Pa. P16(42)	*6.40*
NewHaven,Conn. A7	*6.575*
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	*7.225*
Portsmouth,O. P12	*6.275*
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	*7.225*
Trenton,N.J. A7	*6.575*
Waukegan,Ill. A7	*6.275*
Worcester,Mass. A7	*6.575*

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	127
Ala.City,Ala.,17-18ga. R2	214
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	134
Bartonville,Ill.(19) K4	131
Crawfordsville,Ind. M8	133
Donora,Pa. A7	*138**
Duluth,Minn. A7	*138**
Fairfield,Ala. T2	*138**
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Johnstown,17ga.,6" B2	205
Johnstown,17ga.,4" B2	208
Joliet,Ill. A7	*138**
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	139
Monessen,Pa. P7	136
Pittsburg,Calif. C11	*161**
Rankin,Pa. A7	*138**
So.Chicago,Ill. R2	127
Sterling,Ill.(1) N15	131

*Based on 14-cent zinc

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Conn. A7	*133*
Franklin,Pa. F5	140
Huntington,W.Va. W7	140

Nails, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	*127*

RAILS

	Std. No. 1	Std. No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	*3.775*	*3.675*	*3.725*	*4.25*
Ensley,Ala. T2	*3.775*	...	...	*4.25*
Fairfield,Ala. T2	...	...	...	*4.25*
Gary,Ind. U5	*3.775*	*3.675*	*3.725*	...
Huntington,W.Va. W7	...	...	...	5.00
IndianaHarbor,Ind. I-2	*3.775*	*3.675*	*3.725*	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

Nails, Cut (100 lb keg)

To dealers (23)	
Conshohocken,Pa. A3	*$7.80*
Wheeling,W.Va. W10	7.35

TIE PLATES

Fairfield,Ala. T2	*4.775*
Gary,Ind. U5	*4.775*
Ind.Harbor,Ind. I-2	*4.775*
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	*4.925*
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	*4.925*

JOINT BARS

Bessemer,Pa. U5	*4.925*
Fairfield,Ala. T2	*4.925*
Ind.Harbor,Ind. I-2	*4.925*
Joliet,Ill. U5	*4.925*
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Fairfield,Ala. T2	*6.65*
Ind.Harbor,Ind. Y1	6.15
Ind.Harbor,Ind. I-2	*6.65*
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	*6.65*
Seattle B3	6.65
So.Chicago,Ill. R2	*6.65*
Struthers,O. Y1	6.15
Youngstown R2	*6.65*

Nails, Common Wire

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	*127*
Duluth,Minn. A7	*127*
Fairfield,Ala. T2	*127*
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	*127*
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	*146*
Portsmouth,O. P12	*132*
Rankin,Pa. A7	*127*
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	*147*
Worcester,Mass. A7	*133*

Staples, Polished, Stock

To dealers & mfrs. (7)	Col.
Donora,Pa. A7	*126*
Duluth,Minn. A7	*126*
Fairfield,Ala. T2	*126*
Joliet,Ill. A7	*126*
Pittsburg,Calif. C11	*145*
Portsmouth,O. P12	*132*
Rankin,Pa. A7	*126*
Torrance,Calif. C11	*146*
Worcester,Mass. A7	*132*

NAILS, Cut (100 lb keg)

To dealers (23)	
Conshohocken,Pa. A3	*$7.80*
Wheeling,W.Va. W10	7.35

TIE PLATES

Fairfield,Ala. T2	*4.775*
Gary,Ind. U5	*4.775*
Ind.Harbor,Ind. I-2	*4.775*
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	*4.925*
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	*4.925*

JOINT BARS

Bessemer,Pa. U5	*4.925*
Fairfield,Ala. T2	*4.925*
Ind.Harbor,Ind. I-2	*4.925*
Joliet,Ill. U5	*4.925*
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Fairfield,Ala. T2	*6.65*
Ind.Harbor,Ind. Y1	6.15
Ind.Harbor,Ind. I-2	*6.65*
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	*6.65*
Seattle B3	6.65
So.Chicago,Ill. R2	*6.65*
Struthers,O. Y1	6.15
Youngstown R2	*6.65*

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	Mo	
18	4	1	....		1.505
18	4	2	....		1.650
20.25	4.25	1.6	12.25	3.535-3.675	
19	4	2	7		2.460
18.25	4.25	1	4.75		2.125
18	4	2	9		2.445-2.45
13.5	4	3	....		1.6025
W	Cr	V	Mo		
6.4	4.5	1.9	5		0.96-0.965
6	4	3	6		1.190
1.5	4	1	8.5		0.810

Footnotes:
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(10) Pittsburgh base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 23 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.

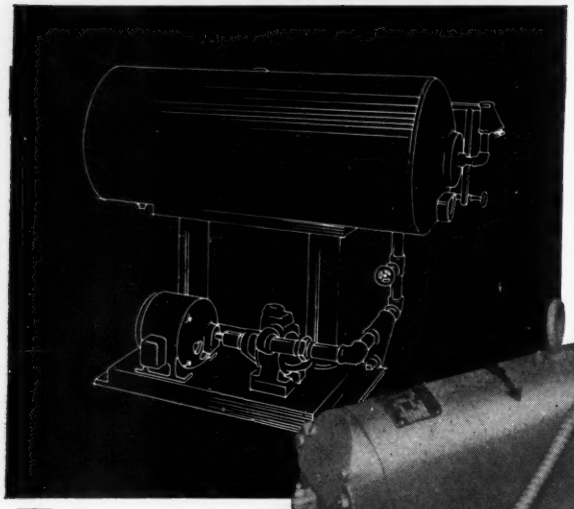
Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

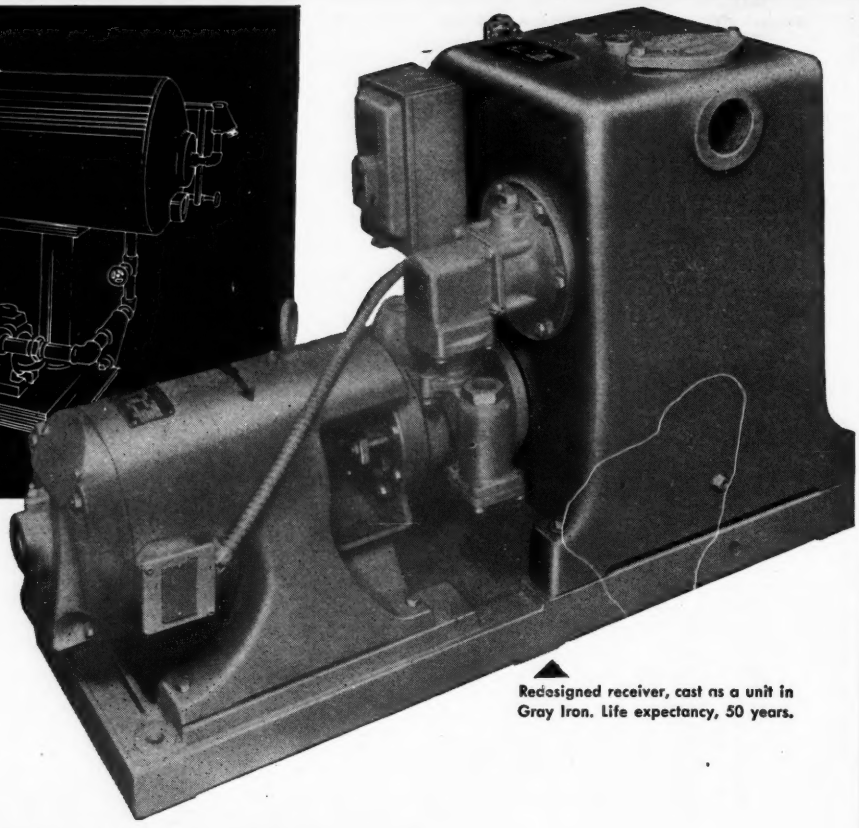
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube



Conventional type of Boiler Feed Pump; steel receiver mounted on steel cradle. Life expectancy, 5 years (average).



Redesigned receiver, cast as a unit in Gray Iron. Life expectancy, 50 years.

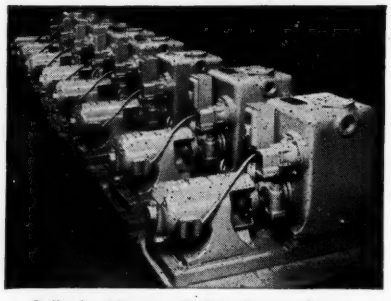
COST SAVINGS BUILT IN by practical use of GRAY IRON!

In Boiler Feed Pumps, first cost is less important than long-time economy. Because water conditions often cause certain materials to deteriorate rapidly, replacement costs are frequently high.

When a leading manufacturer replaced the conventional steel tank with a Gray Iron casting, here's what happened:

- In spite of somewhat higher initial cost, savings at the end of a 5-year period amounted to 38%—including replacement cost of steel tank, plus labor and fittings. This important saving in replacement cost will be realized every 5 years for approximately 50 years.
- By designing for the cast Gray Iron receiver and sub-base mounting, space requirements were reduced—excess piping, valves and fittings were eliminated.

Have you analyzed *your* product for possible cost savings which can be accomplished by designing for and with Gray Iron? Write for technical information on the many advantages of the Gray Iron casting process.



Boiler Feed Pumps with Gray Iron receivers, built for U. S. Navy.

Make it Better with Gray Iron . . .
Second largest industry in the metal-working field

GRAY IRON FOUNDERS' SOCIETY, INC.

NATIONAL CITY-E. 6th BLDG., CLEVELAND 14, OHIO

STANDARD PIPE, T & C

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	...	+0.5	+2.5	...
¼	6.0	0.42	28.5	26.5	...	+3.5	+5.5	...
⅜	6.0	0.57	23.5	21.5	...	+10.0	+12.0	...
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa N2 and 36½% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ½", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜". Following make ½" and larger: Lorain, O. N3; Youngstown R2 and 36¼% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".
Columns B & E: Sparrows Point, Md. B2.
Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.
Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13% on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛"; 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3"; Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ½", 2 points lower on 1", 1¼", 2", 1½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15½% on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ⅜", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.
Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6-in.; Lorain N3; Youngstown Y1.
Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates — Carbon Base 10%	Plates — Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302 ...	....	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....	....
310 ...	36.50	41.00	....	....	....	....	144.00
316 ...	29.50	34.00	....	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....	....
318 ...	33.50	38.00	....	....	....	....	....
321 ...	26.50	31.00–32.00	....	....	23.00	33.00	121.00
347 ...	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....	....
410 ...	20.75	27.25	....	....	....	....	....
Nickel .	33.55	45.15	41.00	54.00	....	....	....
Inconel.	41.23	54.18	....	....	....	....	165.00
Monel..	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers

6 in. and shorter:
½-in. & smaller diam. 15
⅝-in. & ⅝-in. 18.5
¾-in. and larger ... 17.5
Longer than 6 in.:
All diams. 14
Lag bolts, all diams.:
6 in. and shorter ... 23
over 6 in. long 21
Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap and Sleigh Shoe 21
Tire bolts 21
Boiler & Fitting-Up Bolts 31

NUTS

H.P. & C.P.	Reg.	Hvy.
Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in. .	12	6.5
¾-in.-1⅛-in. ..	9	1
1⅛-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in. .	16.5	6.5
¾-in.-1⅛-in. ..	12	2
1⅛-in. & larger	8.5	2
C. P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in. .	23	17.5
¾-in. & 1⅛-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS
American Standard
(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller..	35	28.5
⅝-in. & ⅝-in. ..	29.5	22
¾-in.-1⅛-in.	24	15
1⅛-in. & larger..	13	8.5
		Light
7/16-in. & smaller		35
½-in. to ⅝-in.		28.5
¾-in. to 1⅛-in.		26

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages)
Plain finish .....48 & 10
Plated finishes .....31 & 10

HEXAGON CAP SCREWS
(1020 steel; packaged: per cent off list)
6 in. or shorter:
⅜-in. & smaller 42
¾-in. through 1 in. . 34
Longer than 6 in.:
⅝-in. & smaller 26
¾-in. through 1 in. . 4

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)
1 in. diam x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS
(Packaged; per cent off list)
No. 10 and smaller ... 35
¼-in. diam. & larger .. 16
N.F. thread, all diams. 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
7/16-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus-$1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.
Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
	CARBON	
35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 sheet, except 303 and 309 E2.
Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.
Bridgeville, Pa., bars, wire, sheets & strip U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.
Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.
Cleveland, strip A7.
Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.
Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.
Duquesne, Pa., bars U5.
Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.
Gary, Ind., sheets except Type 416 U5.
Harrison, N. J., strip and wire C18.
Massillon, O., all items, R2.
McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.
McKeesport, Pa., bars, sheets except Type 416 U5.
Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & strip C18.
Munhall, Pa., bars U5.
Muncie, Ind., wire I-7 quotes types 302, 304, 430.
Pittsburgh, sheets C18.
Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.
Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.
So. Chicago, Ill., bars & structurals U5.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars U4.
Wallingford, Conn., strip W2 quotes 0.25c higher.
Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.
Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.
Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.
Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg...26.00-33.00
Industrial xylol ..25.00-33.50
Per ton bulk ovens
Sulphate of ammonia..$32-$45
Cents per pound, ovens
Phenol, 40 (carlots, non-returnable drums) ...17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron: Cents
98+% Fe, annealed. 18.00
Unannealed 14.50
Swedish, c.l.f. New York, in bags..8.85-9.95
Electrolytic iron:
Annealed, 99.5% Fe. 42.5c
Unannealed (99 + % Fe) 36.50
Unannealed, 99 + % Fe (minus 325 mesh) 53.50
Powder Flakes 48.50
Carbonyl Iron:
97.9-99.8% size 5 to 10 microns ..83.00-148.00
Aluminum:
Carlots, freight allowed 31.00
Atomized, 500 lb drums, freight allowed 33.00
Antimony, 500 lb lots . 71.00
Brass, 20-ton lots..28.25-32.00
Bronze, 10-ton lots 51.25-60.00
Phosphor-Copper, 20-ton lots 50.00
Copper:
Electrolytic 37.25
Reduced 34.75
Lead 22.50
Magnesium 75.00-85.00
Manganese:
Minus 100 mesh 57.00
Minus 35 mesh 52.00
Minus 200 mesh 62.00
Nickel unannealed 86.00
Nickel-Silver 5-ton lots 44.50
Silicon 38.50
Solder (plus cost of metal) 8.50
Stainless Steel, 302 ... 83.00
Zinc, 10-ton lots..20.00-28.00
Tungsten Dollars
Melting grade, 99% 60 to 200 mesh:
1000 lb and over ... 5.85
Less than 1000 lb .. 6.00
Molybdenum:
99.9%, minus 200 mesh 3.24
Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

Price net ton

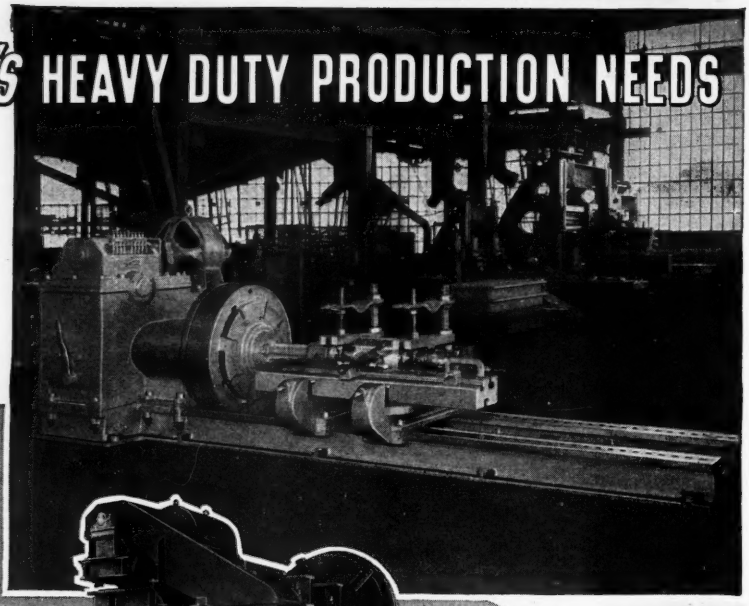
BEEHIVE OVENS

Connellsvil.fur. .$14.50-15.00
Connellsvil.fdy. ..16.50-17.50
New River foundry ... 20.80
Wise county, foundry.. 15.95
Wise county, furnace.. 15.20

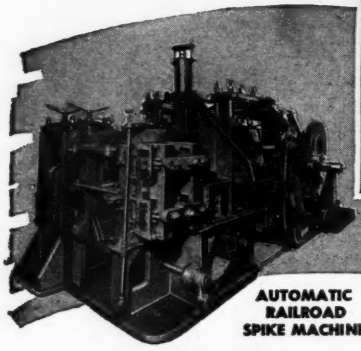
OVEN FOUNDRY COKE

Kearney, N. J. ovens.$22.75
Everett, Mass., ovens New England, del. ..*24.80
Chicago ovens 23.00
Chicago, del. 24.50
Terre Haute, ovens ... 22.50
Milwaukee, ovens 23.75
Indianapolis, ovens ... 22.75
Chicago, del. 26.62
Cincinnati, del. 25.85
Detroit, del. 27.05
Ironton, O., ovens 22.50
Cincinnati, del. 25.12
Painesville, O., ovens. 24.00
Cleveland, del. 25.82
Erie, Pa., ovens 23.50
Birmingham, ovens .. 20.30
Cincinnati, del. 25.23
Philadelphia, ovens ... 22.70
NevilleIsland,Pa.,ovens 23.00
Swedeland, Pa., ovens. 22.60
St. Louis, ovens
St. Louis, del. 25.40
Portsmouth, O., ovens 22.50
Cincinnati, del. 25.12
Detroit, ovens 24.00
Detroit, del. 25.00
Buffalo, del. 26.58
Flint, del. 26.73
Pontiac, del. 25.56
Saginaw, del. 27.08
*Or within $4.55 freight zone from works.

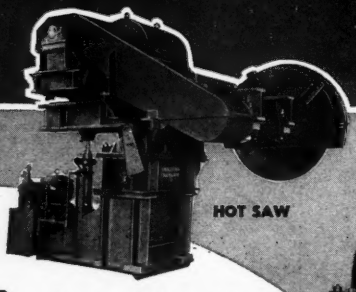
SERVING *TODAY'S* HEAVY DUTY PRODUCTION NEEDS



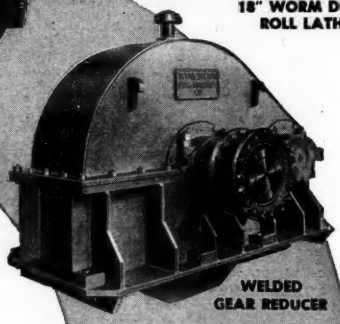
18" WORM DRIVE ROLL LATHE



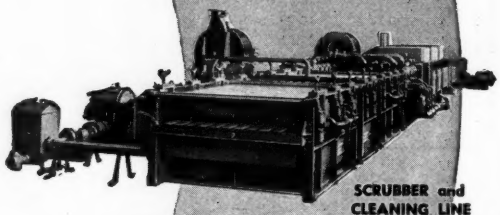
AUTOMATIC RAILROAD SPIKE MACHINE



HOT SAW



WELDED GEAR REDUCER



SCRUBBER and CLEANING LINE

INGOT BUGGY DRIVE

Check this List for the Products You Need

PARALLOY ROLLS (Pinch, Coiler, Tension, Steel Mill)
HYDRAULIC SLAB AND BILLET PILERS
STRIP AND SHEET OILING EQUIPMENT
SHEET SCRUBBER AND CLEANING LINES
HOT SAWS—ROCKING AND SLIDE TYPES
HOT BEDS—COOLING BEDS—TRANSFERS
BILLET EJECTORS—PINCH ROLL STANDS
SLITTERS—SPECIAL SHEARS AND GAUGES
TILTING TABLES—Traveling and Lifting Tables
Continuous PICKLING Lines—ROLLER LEVELERS
FURNACE Charging Equipment—Furnace Pushers
Strip Steel COILERS and REELS—SCRAP BALLERS
RAILROAD Spike Forming Machines—ROLL LATHES
Sheet GALVANIZING Lines—Wire Patenting Frames
Stretcher Levelers—Angle and Shape Straighteners
Rolling Mill Tables—Gear and Individual Motor Types
DUCTILE CASTINGS (80,000 PSI.)

Machinery Built to Customer's Design and Detail Drawings

The Youngstown Foundry & Machine Co.

OVER SIXTY YEARS OF SERVICE TO THE STEEL INDUSTRY

Youngstown, Ohio

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††‡		Carbon	Floor
New York (city)	6.28	7.24	8.37	6.50	...	6.52	7.33	9.29§	6.38	6.74	8.01
JerseyCity(c'try)	6.09	6.94	8.12	6.36	...	6.22	7.03	8.99§	6.08	6.46	7.71
Boston (city) ..	6.45	7.23	8.39	6.40	...	6.30	6.82‡	10.80§	6.45	6.65	7.89
Boston (c'try)..	6.25	7.03	8.19	6.20	...	6.10	6.61‡	10.60§	6.25	6.45	7.69
Phila. (city) ...	6.09	7.05	8.20	6.29	7.29	6.35	7.19	10.50§	6.11	6.38	7.33
Phila. (c'try) ..	5.84	6.80	7.95	6.04	6.94	6.10	6.94	10.25§	5.86	6.13	7.08
Balt. (city) ...	5.74	7.04	8.22	6.27	...	6.25	6.87‡	...	6.37	6.33	7.61
Balt. (c'try) ..	5.54	6.84	8.02	6.07	...	6.05	6.67‡	...	6.17	6.13	7.41
Norfolk, Va. ..	6.78	...	...	...	...	6.04	7.30	...	6.30	6.30	7.15
Richmond, Va. .	5.74	6.57	8.38	6.14	...	5.91	6.59	...	6.72	6.86	8.00
Wash. (w'hse) .	6.05	7.26	8.49	6.50	...	6.50	7.26	...	6.60	6.65	7.86
Buffalo (del.)..	5.74	6.52	8.26	6.06	...	5.72	6.65‡	10.72	6.02	6.18	7.55
Buffalo (w'hse).	5.54	6.32	8.06	5.86	...	5.52	6.45‡	10.52	5.82	5.98	7.35
Pitts. (w'hse)..	5.54	6.32	7.65	5.59	6.90	5.47	6.15	10.10	5.65	5.65	6.89
Detroit (w'hse).	6.00-6.20	6.81-7.04	8.34	6.13-7.05	8.03	6.12-6.34	6.975-7.41	10.92	6.42-6.65	6.47-6.65	7.52-7.72
Cleveland (del.)	5.74	6.52	7.96	5.85	7.14	5.81	6.35‡	10.41	6.15	6.02	7.39
Cleve. (w'hse) .	5.54	6.32	7.76	5.65	6.94	5.61	6.15‡	10.21	5.95	5.82	7.19
Cincin. (w'hse).	5.87	6.39	8.12	5.79	...	5.77	6.66	10.52	6.12	6.17	7.31
Chicago (city)..	5.74	6.52	7.85	5.69	...	5.67	6.25‡	10.30	5.85	5.85	7.09
Chicago (w'hse)	5.54	6.32	7.65	5.49	...	5.47	6.05‡	10.10	5.65	5.65	6.89
Milwau. (city) .	5.90	6.68	8.01	5.85	...	5.83	6.51‡	10.37	6.01	6.01	7.25
Milwau. (c'try).	5.70	6.48	7.81	5.65	...	5.63	6.31‡	10.17	5.81	5.81	7.05
St. Louis (del.)	6.04	6.80	8.15	5.99	...	5.97	6.65‡	10.60	6.25	6.25	7.49
St. L. (w'hse) .	5.84	6.60	7.95	5.79	...	5.77	6.45‡	10.40	6.05	6.05	7.29
Kans. City (city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kans.Cty(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city).	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.23
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city).	6.55	8.35[3]	9.45	6.60	10.75	6.45	8.35	11.80	6.50	6.70	8.80
L. A. (w'hse)..	6.35	8.15[3]	9.25	6.40	10.55	6.25	8.15	11.60	6.30	6.50	8.60
Seattle-Tacoma.	7.16	8.38	9.45	7.25	...	7.08	8.86	10.35§	6.52	6.89	8.73
SanFran.(w'hse)	6.64	7.88[3]	9.10[3]	6.42	...	6.32	8.20	11.30§	6.30	6.43	8.50

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ add 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb.; [L]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore
(1952 prices not established; 1951 contract prices follow.)

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore
Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore
Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	32.00

Tungsten Ore
Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium ton lot $1.10, less ton $1.12. Delivered. Spot, add 5c.

SILICON ALLOYS

25.30% Ferrosilicon: Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c, Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3.3-5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

NOTE: Current prices on manganese, titanium and "other ferroalloys" appeared on page 161 Aug. 18 issue; briquetted alloys, page 143, Aug. 11; calcium and zirconium, alloys and refractories, page 173, Aug. 4.

*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Aug. 21	$43.00
Aug. 14	43.00
July, 1952	42.60
Aug., 1951	44.00
Aug., 1947	39.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grade

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6. For preparing into:
(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable).	45.00
4. No. 4. (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery.	52.00

OPEN MARKET

(Delivered prices include broker's commission. Asterisk [*] denotes nominal price.)

Birmingham
(Delivered)

No. 1 cupola cast	$42.00
Stove plate	37.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	40.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.00-46.00
No. 1 machinery cast	46.50-47.50

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings.	33.50
Mixed borings, turnings	37.50
Shoveling turnings	37.50
Cast iron borings	37.50
No. 1 cupola cast	48.00-49.00
Charging box cast	47.00-48.00
Heavy breakable	46.00-47.00
Burnt cast	40.00-41.00
Cast iron brake shoes	40.00-41.00
Stove plate	43.00-44.00
Clean auto cast	50.00-52.00
Unstripped motor blocks	36.00-37.00
Malleable	60.00-61.00
Drop broken machinery	52.00-53.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	49.00†
Heavy breakable	45.00†
Clean auto cast	52.00†
Unstripped motor blocks	43.00†
Drop broken machinery	52.00†
Charging box cast	47.00†

†Ceiling price.

Los Angeles
(Delivered)

No. 2 bundles	29.00
No. 1 cupola cast	42.00-44.00

New York
(Brokers' buying prices)

Cupola cast	40.00-42.00
Unstripped motor blocks	36.00-37.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings.	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	45.00-49.00§
Unstripped motor blocks	41.00††
Heavy breakable	45.00†
Machinery cast	52.00†

†Ceiling price. ‡Nominal. §Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings.	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

†Ceiling price.

San Francisco
(Delivered)

No. 2 bundles	30.00
No. 1 cupola cast	46.00

Seattle
(F.o.b. shipping point)

No. 1 cupola cast	44.00
Heavy breakable	40.00
Unstripped motor blocks	38.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Unstripped motor blocks	39.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings.	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Busheling new factory:	
Prep'd	33.00
Unprep'd	31.00
Short Steel Turnings	32.00
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.o.b., shipping point.

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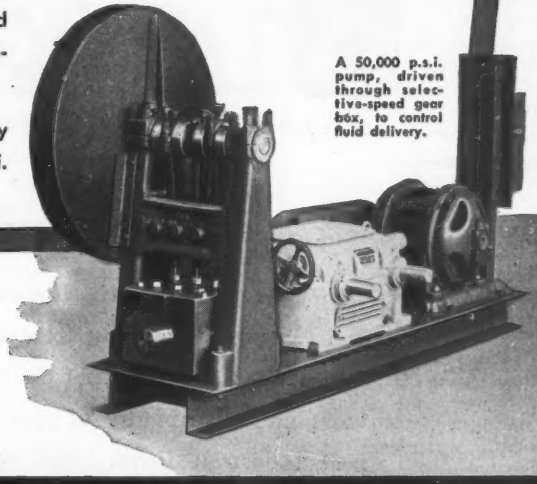

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The Metal Market

Brass, Bronze Ingots Find New Resting Place

Benj. Harris & Co., Chicago Hts., Ill., manufacturer of brass and bronze ingot, completed its new $1-million plant in time to celebrate the company's 50th anniversary. Covering ten acres of land, the plant was in the planning stage since fire burned out most of the original facilities in 1950. The testing laboratory and office building are air conditioned. The view above shows stacks of ingots piled inside the plant

Executives in companies engaged in nonferrous metal producing face the difficult task of satisfying union demands which were strengthened by steel strike settlement

LABOR PROBLEMS will plague executives of nonferrous metal firms for weeks to come. Failure to settle them promptly has resulted in serious interruption to operations in certain brass mills and in the Texas City tin smelter. Production was resumed last week at the tin smelter following signing of a contract by Tin Processing Corp. and the union. Pig tin output of the smelter is scheduled to rise to 3000 tons a month compared with output of about 1800 tons monthly prior to the start of the strike ten weeks ago.

Current unsettlement in the industry has been aggravated by the wage increases and other advantages gained by steelworkers. Similar concessions are now sought by a large segment of workers in other sections of the metalworking industry. International Union of Mine, Mill and Smelter Workers called for a strike vote among its 100,000 workers in copper and other metal industries.

Aluminum Pact—Aluminum Co. of America has signed an agreement with the CIO United Auto Workers covering about 4000 workers at its plants in Cleveland, Bellwood, Ill., Vernon, Calif., and Garwood, N. J. Part of this agreement provided for union security identical with the plan adopted by the CIO United Steelworkers. Cost of the economic provisions of the contract will be more than 21 cents an hour. The new contract represents the first time Alcoa has signed a master contract for all four of the UAW plants.

The old headache of power shortages is due to hit aluminum production in the Pacific Northwest at least two months earlier than usual. The government is getting ready to limit the use of hydroelectric power from its plants. For the time being, it is not expected to hit aluminum production because of the availability of steam generators. Normally the water shortage does not occur until October. If aluminum production is curtailed from this cause, it could prevent any real decontrol of the metal before the second quarter of next year.

Supplies Rising—Increased production of aluminum will be shared by the government for its stockpile and by civilians for industrial use. In general, fourth quarter aluminum allotments are expected to hold at about the same level as in the third quarter. However, more aluminum will be available for civilian producers making less essential goods whose allotments have been cut drastically.

More Copper—Allotments of copper will be somewhat higher. DPA is making a study to determine whether the apparent balance of supply against demand is real or whether it has been created, in part at least, by the steel strike. The agency also wants to know whether the military demand is going to hold steady or whether it will increase sharply again.

In the meantime, the copper "bonus" provided for wire mills holding military orders is limited to programs carrying the allotment symbols A-1 through A-9 and C-8 and C-9. Originally the "bonus" was paid to mills holding orders in the A-E chain. It works like this: Copper is made available on an allocation basis to fill the orders accepted by the mills carrying the preferred designations. The balance is divided among all of the mills on a historical basis.

Distributors Get More—National Production Authority authorized distributors of brass mill products to order additional quantities of these items from producers during August and September. Purpose of the action is to permit distributors to accumulate inventories up to pre-Korean levels. The order is designed especially to aid builders of homes, stores, filling stations and other small projects for which selfauthorization allowances of copper products were increased recently. The regulation may result in about 2.5 million pounds of additional brass mill items flowing through distributors' hands during August and September.

Copper Castings Prices Advance

Producers of copper and copper-alloy castings are permitted to increase their ceiling prices to reflect increases in the cost of imported copper or copper derived from imported copper-bearing materials.

The amount of increase to be reflected is calculated at the beginning of each month by multiplying the percentage of foreign copper actually used in the production of castings during the preceding calendar month by 80 per cent of the cost of such foreign copper in excess of 24.50c a pound. The ceiling price adjustment for the first calendar month will be 3.84 cents a pound of the copper content of the castings.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 14.00c; brass special 14.25c; intermediate 14.50c, East St. Louis; high grade 15.35c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $187-$190 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.00 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95%, 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	R-317-T4	—Hexagonal— 17S-T4
0.125	54.6	....	....
0.156-0.0188	46.2	....	....
0.219-0.313	43.6	....	....
0.375	42.0	48.3	50.4
0.406	42.0	....	....
0.438	42.0	48.3	50.4
0.469	42.0	....	....
0.500	42.0	48.3	50.4
0.531	42.0	....	....
0.563	42.0	....	47.3
0.594	42.0	....	....
0.625	42.0	45.7	47.3
0.688	42.0	....	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	....	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	....	....
1.625	38.3	....	41.5
1.688-2.000	38.3	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.50c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 12.50-12.75; battery plates 7.00-7.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 14.50-14.75.

Zinc: Old zinc, 6.00-6.50; new die cast scrap, 6.00-6.50; old die cast scrap, 4.75-5.00.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Aug. 12-21	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Aug. 11	24.50	15.80	13.50-14.00	121.50	20.00	39.00	56.50	83.25
Aug. 6-9	24.50	15.80	13.50	121.50	20.00	39.00	56.50	83.25
Aug. 4-5	24.50	15.80	15.00	121.50	20.00	39.00	56.50	83.25
Aug. 1-3	24.50	15.80	15.00	121.50	19.00	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley, Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

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Stainless Steel . . .

Stainless Steel Prices, Page 147

Pittsburgh — Production of hot-rolled stainless steel, normally rolled in the hot mills at U. S. Steel Co.'s Wood Works in McKeesport, Pa., will be transferred to the company's Vandergrift, Pa., plant. The move was decided upon after successful experiments recently were completed in stainless steel rolling on existing equipment at Vandergrift.

The change, scheduled to take place within the next month, involves relocating about 150 employees of Wood Works. Some of these employes will be transferred to Vandergrift, while others will be offered positions in other plants of the company, including the new Fairless Works.

The only change at McKeesport will be elimination of hot rolling facilities. Other operations will be continued there as usual, including finishing and shipping of stainless steel.

The hot rolling operations are being consolidated at Vandergrift due to the availability of more modern facilities there and because the move will provide fuller working schedules.

Sheets, Strip . . .

Sheet and Strip Prices, Page 143 & 144

Pittsburgh—Sheet and strip availability continues to be bound by carryovers. There is little chance of much sheet steel going anywhere but to the military for the balance of the year. Current carryovers getting consideration are the defense orders; civilian consumers must wait. Pressure is expected to ease somewhat in the lighter gages, but not immediately. Conversion sheet demand is expected to ease accordingly.

Boston — Most shops using flat-rolled steel have resumed operations. Additional curtailments in operations are minimized by heavy shipments, direct to consumers, converters and warehouses. Many have not attained pre-strike production but deliveries are much higher than were expected. Usual cold-rolled strip differential of $10 ton, New Haven, Conn., over Cleveland is retained by leading primary producer.

New York—Some specialties, such as straight chrome material and high silicon sheets, can still be ordered for fourth quarter. Placing of new orders for hot and cold-rolled sheets and galvanized sheets is virtually impossible unless accompanied by a high military priority.

Detroit—Strip mills are booked solidly through the year and have no qualms about the possibility of a decline in demand in the near-term. Automakers are scheduling high production. Body builders are scouting suppliers to see if materials are available to meet schedules.

St. Louis—Military set-asides under NPA M-1 will trim tonnage of sheets and strip available to nonrated consumers in this district substantially but not painfully. There are still some consumer inventories. Granite City Steel Co., which opened fourth-quarter books last week, trimmed customer allocations by the exact M-1 percentages, but notified users October tonnages would be shipped in December, November in January and December in February. Actually fourth-quarter schedules were nearly filled by strike backlogs and earlier delivery delays. Sheet demand is up sharply, as is conversion demand. Considerable St. Louis ingots are going to Chicago and Pittsburgh districts.

Los Angeles—Automobile plants of Ford and General Motors, closed by the steel strike, reopened after parts pipelines from the East were filled.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 143

Seattle—Mills in this area have substantial reinforcing bar backlogs. Demand for small tonnages continues strong. Seattle's Battery street tunnel, bids Sept. 9, involves 850 tons reinforcing.

Steel Bars . . .

Bar Prices, Page 143

Boston—Pinch in carbon and alloy bars is emphasized by placement of heavy tonnage during period of suspension in production. Producers have no fourth-quarter openings for new business. Spot directives are also cutting into bar schedules as numerous consumers are about ready to get into mass production on armament contracts taking high ratings.

United States Steel Co. is low on substantial part of heavy bar tonnage closed by Springfield armory, including 153 tons, two-inch squares, round corners in multiple lengths, at 6.40 cents mill; also 362 tons of bar stock at prices from 4.90 cents to 5.35 cents f.o.b. mill. Inland Steel Co., Chicago, is furnishing 5000 tons of carbon bars 1¾-inch squares, for remelting, Watertown arsenal at 4.70 cents per pound; arsenal is closing Sept. 8 on 450 tons of bar steel.

New York—Hot carbon bar consumers stand little chance of getting new orders on mill books for fourth quarter, except where they have top military priorities. Only in some grades of hot alloy bars is it possible for civilian buyers to place new tonnage for fourth quarter, and only then in relatively small amounts which may require some shopping among the mills.

Philadelphia—While hot carbon bar producers are fully scheduled for fourth quarter on nondefense work, they are accepting tickets which had been issued for that period for shipment of tonnage in January and February. Fourth-quarter set-aside tonnage is increasing, with producers anticipating quotas will be fully taken up as the season advances. Question arises as to which would come first, a high-rated carryover from the current quarter or a fourth-quarter set-aside requirement, should there be a real show-down. With prices up $5 a ton, retroactive to July 26, hot carbon bars at Johnstown, Pa., the governing base for this district, are 3.95 cents, or 4.502 cents delivered Philadelphia.

Chicago—Cold drawers are receiving shipments from mills at a faster clip and are back virtually to normal operations. Good balance in grades

and sizes isn't restored yet, this being dependent on mill rolling cycles. Customer demand is becoming more intense. It will be September before much material for drawing on a conversion basis is received.

Wire . . .

Wire Prices, Page 145

Boston — That wire mills will emerge from backlog blockade ahead of producers of most steel products is indicated by fact more fourth-quarter volume in form of new orders is open.

Los Angeles—Wire buying is depressed; supplies are good in all categories. Wire producers' fourth-quarter books are still open.

Plates . . .

Plate Prices, Page 143

Philadelphia—Most if not all producers of sheared plate are booked solidly through the fourth quarter, with due allowance for the 25 per cent set-asides for top priority work. This situation is due primarily to strike losses and other arrearages, rather than to new bookings. In effect it is a blanking out of fourth quarter on new nondefense, with exceptions in flange work, special alloy plates, clad steel and floor plate. Silicon plate, which comes usually in heavy gages for atomic and other types of heavy pressure work, is extremely tight. At least four of the five producers in the district advanced prices $4 a ton, retroactive to July 26. The price at Sparrows Point, Md., the governing base for this district, is 3.90 cents, or 4.2335 cents delivered. In addition to a $4 a ton increase on carbon plates to 4.35 cents mill, Lukens Steel Co., Coatesville, advanced low alloy steel plates $10 a ton to 5.75 cents per pound.

Boston—Plate mills will have little new tonnage open for fourth quarter, notably in wider and heavier sizes. Volume of tonnage covered by higher ratings is large; so is carryover. Clad plate deliveries are improved, eight weeks for straight chromium stainless, 16 weeks for 18-8.

New York—District plate consumers, including ship repair yards and boiler shops, report difficulty in maintaining operation, as most have used up what little excess inventories they had on hand, or at least have gotten their inventories in such unbalance they find it hard to proceed. Most will eventually get much of the steel scheduled for third quarter, even though they will not be able to place more orders for shipment over the rest of the year unless they have a top military rating, but they are much concerned over the nearby outlook.

Pittsburgh—Producers of plates are plagued by military carryovers, and the threat of further directives. No space will be available for new orders until well into January. Open space that developed on the books from orders on hand and filled immediately after the steel strike is going to new military orders. When civilian orders are again filled, it will be the oldest orders first.

Seattle — Plates continue in ex-

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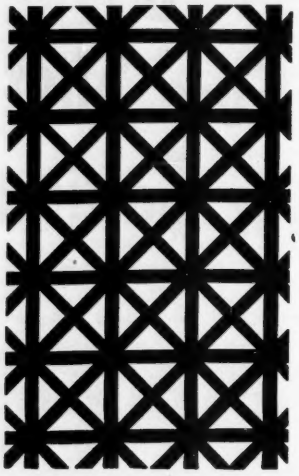

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tremely short supply and small fabricators are hard pressed. A shipment of 3200 tons of H piling arrived from Germany and is being welded by Isaacson Iron Works. This material was purchased, it is reported, because domestic allotments were not available. It is to be used for pier construction at Ward Cove, Alaska, for Ketchikan Pulp Co. For a Seattle tunnel project, bids Sept. 9, 16,620 feet of steel piling will be required.

Tubular Goods . . .

Tubular Goods Prices, Page 147

Boston — Except for top ratings, pipe orders will be difficult to place in fourth quarter, notably seamless but also pressure and mechanical tubing. Mills will be shipping distributor third-quarter tonnage in last three months and not before October will there be much activity in new orders for next year.

Los Angeles — Southern California utilities will receive sufficient allocations to meet winter demands for new and replacement pipe and casing, says Southern California Gas Co.

Seattle—Demand for cast iron pipe is seasonally normal. Labor troubles at pipe mills are aggravating delivery problems.

Structural Shapes . . .

Structural Shape Prices, Page 143

New York—Structural activity remains limited. There is little commercial work because of government restrictions until the steel supply improves. Also, higher prices for steel and increasing wage rates in the building trades are tending to curb activity in this and various directions until a more accurate appraisal can be made as to what these increases will amount to in relation to the cost of new construction. Bridge work is still the most active item around here and includes a substantial tonnage for several New York state bridges on which bids will be closed Sept. 4.

Boston — Fabricating shops for some time have been passing on higher costs for plain material and labor, reflected in open bids on bridge and other work. While some shops have considerable steel in yards, including some foreign tonnage purchased earlier, varying percentages of plain material for completion of most unfinished jobs are needed, presenting somewhat false impression of inventories.

Philadelphia—While new structural work is coming out slowly, ending of the 109-day strike of the operating engineers—AFL—permitted resumption of work on considerable heavy construction. Due to this strike, fabricators had been forced to store much fabricated tonnage, in some cases to the extent of their available facilities. This steel is now beginning to move. Shape prices have been advanced $4 a ton, retroactive to July 26, by the two leading producers. Hence the governing base price on shipments here is 3.90 cents, Bethlehem, Pa., or 4.13 cents, delivered.

Pittsburgh—Construction programs will get some setting back. There is little structural material going any-

where except to the military. Bars and special shapes are items that will be scarcest, one reason being that the plate program is taking so much steel that might otherwise go into structurals. One encouraging note: Structurals are expected to ease first; probably before the first of the year.

Los Angeles—Shortage of structural materials eased enough to permit immediate start of construction of $107 million worth of schools in 12 southern counties of California. Program will cover five years.

Seattle — Fabricators have full schedules, several important tonnages awaiting placement.

Semifinished Steel . . .

Semifinished Prices, Page 143

Detroit — Conversion tonnage is strictly limited, the major reason, according to some former sources, being that facilities are better balanced so that less open ingot tonnage or rolling space is available. Automotive purchasing men, however, are scouring steel foundries and electric furnace operators in the hopes of taking advantage of the relaxation on use of conversion steel without surrender of CMP tickets.

Pig Iron . . .

Pig Iron Prices, Page 142

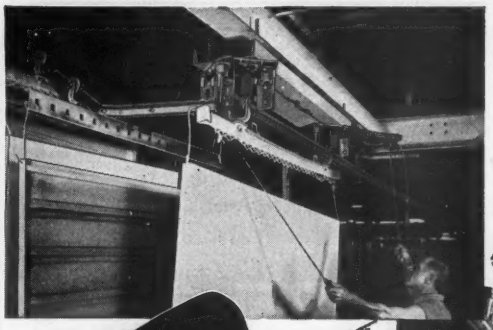
Chicago—Demand for pig iron is increasing but not as much as was anticipated. Requirements for castings are held back by users whose supplies of rolled steel fall short of maintaining manufacturing operations. This is particularly true of farm equipment makers. Iron suppliers cut third-quarter allocations to foundries in half. Books for fourth quarter are being opened and on a tentative basis of full quotas. Active blast furnaces in the district total 37 out of 42, with Inland Steel Co. having restored its No. 2 stack at Indiana Harbor which has been idle since May. 25.

New York—Demand for basic iron is strong, with requirements well in excess of supply. Supply and demand for foundry iron are in fair balance, particularly because gray iron foundries experience a continued lag in demand for castings. Some increase in casting business is anticipated after Labor Day but this expectation is not causing a rise in pig iron demand, nor is the threat of a coal strike this fall.

Philadelphia—While foundry iron is in fair balance, as to supply and demand, basic iron is tight, with sellers of Texas iron having no difficulty selling here at $4 and $5 a ton over the local market. Even foundry iron is expected to be tighter next month, as some improvemnt in foundry business is expected.

Los Angeles — Foundry pourings, reduced 10 per cent by the steel strike, are starting to pick up. Many foundries which suspended shipments during the strike period are shipping larger quantities now.

San Francisco — Merchant iron is scarce. Producers have little left over beyond their own wants to offer to the foundry trade.



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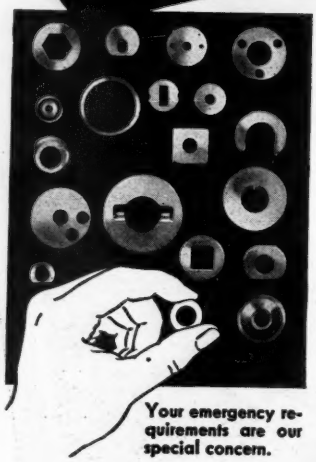

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Iron Ore . . .

Iron Ore Prices, Page 149

Cleveland—Record cargoes of iron ore are being carried by vessels in the Great Lakes fleets. The all-time record of 20,887 tons for a single cargo may be topped later this year.

Shipments jumped to 3,280,094 tons in the week ended Aug. 18, bringing the cumulative total for the season to 31,316,288 tons against 53,131,894 tons for the like period a year ago.

Scrap . . .

Scrap Prices, Page 150

Detroit—Scrap men contend that Detroit has a unique problem, the result of having a good portion of its steel producing capacity in operation through the strike and of having a large part of its steel consuming industry knocked out by the strike. Thus scrap demand remained relatively high and generation was relatively low. Result has been a loud clamor for steel scrap and a snap back to ceilings, and possibly some downgrading in quality to take care of demand. Cast is rock firm at ceiling on the major grades, such as clean auto cast and cupola cast. Stove plate, for a considerable time in the doldrums, is in extremely heavy demand at ceiling. Drop broken machinery is in limited demand, the best material bringing ceiling. Only limited buying is noted on other grades with prices inconclusive, and highly dependent on quality.

Buffalo—All scrap prices are back up almost to ceiling levels. Three leading local mill consumers placed substantial new orders at top levels. New business also is reported in cast grades. A revival took place also in water shipments with approximately 10,000 tons arriving via the lakes. Dealers' yard stocks continued heavy but movement of material was sustained at a good pace.

Philadelphia—Scrap prices are unchanged, despite some easing in demand for cast and no particular pressure in steel grades except for the very top qualities. One district mill has the heaviest stocks on hand in many months.

Pittsburgh—Demand is not great but scrap prices continue at ceiling, with a slight rise in foundry cast grades that have been running under ceiling. More activity is reported in scrap steel for foundries. Much of this is being used in small electric furnaces for sheet conversion deals. Some scrap consumers are getting their supplies a little later than expected. Reason: Shortage of freight cars to transport it.

St. Louis—Scrap price undertone is strengthening and buying is picking up. Ceiling prevails on nearly all steel and cast grades and dealers are limiting the springboards they will pay. Last week one mill bought 10,000 tons of No. 2 steel at ceiling and a $3 springboard, $1 more than a month ago. Quality is improving and carloads are heavier. Yards are cleaned out and country shipments are slowing. Mills stocks average at least 30 days.

San Francisco — Scrap steel and

iron are flowing in good supply and there are no thoughts of shortages at the moment. Prices of steel grades, except No. 2 bundles and turnings, remain at ceilings. No. 1 cupola cast, reflecting the continued lack of pig iron, held its recent gains, being quoted at $46 a ton delivered.

Seattle—Mills report the scrap market presents no current problems. Shipments are heavy, grades good, and inventories are being increased. Ceiling prices are being paid for steel and $5 under, as a rule, for cast iron. No offshore cargoes of scrap are afloat for this area.

Warehouse . . .

Warehouse Prices, Page 149

Philadelphia—Distributors dealing mostly in plain carbon steels report a decline in tonnage this month due to low inventories. They haven't been able to build up stocks to the average level that prevailed in July. Some say their inventory position has been so bad this month that they seriously doubt that even the price increases now going into effect will be sufficient to cause an increase in dollar volume for the current month, as compared with July.

Pittsburgh—Warehouse supply picture continues to improve. Although steel supply to warehouses is flowing in irregularly, it is coming, and at a rate better than has been expected. Warehouse customers aren't able yet to get everything they need immediately, but promises are good, and deliveries current.

Detroit—Worried about the lack of ordering, one warehouse here called customers and offered them steel. A clamor resulted and touched off heavier buying than encountered since the strike. Other warehouses say buying volume is picking up, but is far short of hectic. There is considerable uneasiness over long-term demand. Some interests are well satisfied with receipts but acknowledge some drop-off may be coming. Stocks remain badly depleted, the scarcest items being large bars and heavy plates. One mill solicited warehouses asking them to take 120 per cent of base shipments of structural steel. A similar offer was made on cold-rolled sheets to one warehouse.

Chicago—Warehouses are encountering stronger demand for steel with consumers learning that their position with regard to receipts from mills isn't as good as they had hoped. Effort is to make up with warehouse material. Prospects for this are slim because inventories aren't capable of sustaining the load. Deliveries from mills are becoming more uniform as to product mix, with sheets and bars coming in best. Heavy plates and structurals are slowest. Cold drawn also is delayed because of the time required for processing and reshipment.

San Francisco—A 15-day government "hold" order of half of new shipments of certain types of steel placed a pinch on many warehouse customers not engaged in primary defense work.

Seattle—Demand continues strong for all warehouse items except odd sections. Inventories are extremely low and include mostly "cats and

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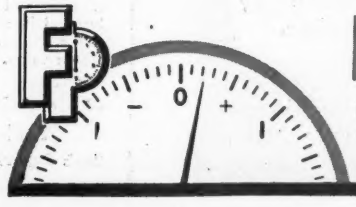

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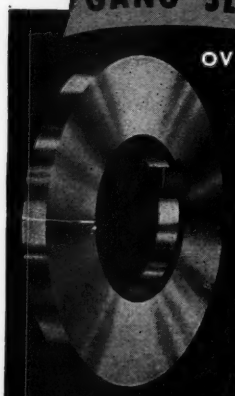

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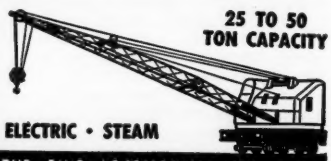

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dogs." Plates and sheets continue in the most critical category. Jobbers find that Coast mills are making fast deliveries but some items obtainable only from the East are still difficult.

Canada . . .

Toronto, Ont.—While iron and steel production in Canada during June fell below that of the preceding month, partly because of the shorter month of June, output for the first six months this year made a new all-time record.

Production of steel ingots and castings in June amounted to 305,455 net tons for a daily average of 94.4 per cent of rated capacity and compares with 330,524 tons in May when the average daily was 98.8 per cent, and with 293,515 tons or 90.7 per cent for June, 1951. Output in June, 1952, included 294,006 tons of steel ingots and 11,449 tons of steel castings.

For the six months ended June 30, 1952, production of steel ingots and castings totaled 1,914,915 net tons, a new record, and comprised 1,845,804 tons of steel ingots and 69,111 tons of castings, compared with 1,824,691 tons consisting of 1,763,269 tons of steel ingots and 61,422 tons of steel castings in the like period of 1951.

Pig iron production in June amounted to 229,266 net tons for a daily average of 92.2 per cent of rated capacity and compares with 237,078 tons for May when the daily average was the same as for June, and with 213,184 tons in June, 1951, when the daily rate was 94.4 per cent of rated capacity. Output for June this year consisted of 178,279 tons of basic iron, 20,322 tons of foundry iron and 30,665 tons of malleable iron.

In the first half this year production of pig iron totaled 1,329,745 net tons and consisted of 1,031,940 tons of basic iron, 108,701 tons of foundry iron and 189,104 tons of malleable iron. For the corresponding six months, 1951, output totaled 1,258,201 tons including 972,735 tons of basic iron, 158,785 tons of foundry iron and 126,681 tons of malleable iron.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2100 tons, state bridge, Lehigh county, Pennsylvania, through G. A. & F. C. Wagman Inc., Dallastown, Pa., general contractor, to Bethlehem Steel Co.

1000 tons or more, Tennessee Valley Authority, steam plants, Pickwick Reservoir, Ala., Shawnee, Ky. and Kingston, Tenn., to American Bridge Co., Pittsburgh.

175 tons, state bridge, Monroe county, Pennsylvania, through H. R. Miller Inc., Lancaster, Pa., to Bethlehem Steel Co.

100 tons, hangar at Seattle-Tacoma airport, for Western Air Lines, to Pacific Car & Foundry Co., Seattle.

STRUCTURAL STEEL PENDING

13,000 tons, various Washington state highway bridges; bids will be called before end of 1952.

5000 tons, superstructure, South bridge, Connecticut river, Agawam-Springfield, Mass.; American Bridge Co., Pittsburgh, low $2,597,961. bids Aug. 19.

1500 tons, teaching hospital, Oregon State University, Portland; bids rejected, in excess of funds; second call expected soon.

1500 tons, estimated, hangar and service buildings, municipal airport, Burlington, Vt.; bids Aug. 25, Corps of Engineers, Boston.

1225 tons, contract 268, municipal subway extension, Philadelphia; Lipsett Inc., New York, low on general contract.

870 tons, state bridge, Northampton county, Pennsylvania; Berlanti Construction Co., Harrison, N. Y., low on general contract.

420 tons, three state bridges, Tolland-Willington, Conn.; Brunali Construction Co., Southington, Conn., low on general contract; also 210 tons reinforcing bars.

230 tons, administration and service building, Pan-American Air Lines, Seattle; George E. Teufel Co., Seattle, low $503,000.

130 tons, transonic range building, Aberdeen, Md.; bids Aug. 27.

REINFORCING BARS . . .

REINFORCING BARS PLACED

600 tons, Ward Cove, Alaska, pulp mill project, to Bethlehem Pacific Coast Steel Corp., Seattle.

400 tons, Boeing Airplane Co. hangar, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; H. S. Wright & Co., Seattle, general contractor.

200 tons, water system project, Great Falls, Mont., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

850 tons, Battery street tunnel and viaduct, Seattle; bids to Olympia Sept. 9.

PLATES . . .

PLATES PLACED

3200 tons, H-piling supplied by German producer for Alaska pier project, being fabricated by Isaacson Iron Works, Seattle.

140 tons, 500,000-gallon elevated water storage tank, Fort Eustis, Warwick City, Va., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

PLATES PENDING

155 tons, refueling system, six 50,000-gallon tanks, airport, Charleston, S. C.; bids to Corps of Engineers, Charleston.

150 tons, 500,000-gallon standpipe, Highland Falls, N. Y.; bids Sept. 16.

RAILS, CARS . . .

RAILROAD CARS PLACED

Canadian National, 6 multiple unit coaches and 12 trailer cars, to Canadian Car & Foundry Co., Montreal.

Detroit, Toledo & Ironton, 300 fifty-ton automobile box cars, to Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Alaska Railroad, 100 hopper cars, 50 or 70 tons each, all steel, used or rebuilt; bids to General Services, Seattle, Aug. 22.

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CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Ceco Steel Acquires Plant Site

Ceco Steel Products Corp., Chicago, purchased an 18-acre tract at 25th avenue and Roosevelt road, Broadview, Ill., for construction of a plant. Facilities would be used for fabricating reinforcing bars and for warehousing. Ground is not expected to be broken before 1953.

Read Standard Closes Plant

Confirming earlier reports, Read Standard Corp., Erie, Pa., closed its plant Aug. 8. Final plans for disposition of the plant and its facilities are not complete.

Hagan Buys American Cast Products

Hagan Corp., Pittsburgh, purchased American Cast Products Inc., Orrville, O. Neil A. Benson, plant manager of the Hagan Orrville plant, will directly supervise operations of American Cast Products Inc. as a wholly owned subsidiary. J. Carl Hall will continue as sales manager of the gray iron foundry and assist in its operation. Hagan Corp., as manufacturer of combustion and process control systems, flow meters and other products requiring castings, is one of many old customers of the foundry. The subsidiary is directly across the street from the automatic control and flow meter plants of Hagan Corp. in Orrville.

Antiference To Open Toronto Branch

Antiference Ltd., London, England, will operate a branch manufacturing and assembly plant in Toronto, Ont. The firm leased space at 140 Kendal Ave. which is being equipped for production of aerials.

Weirton To Erect Harbor Facilities

Contract for construction of harbor facilities at the Weirton, W. Va., plant of Weirton Steel Co. was awarded to Dravo Corp., Pittsburgh. Weirton Steel will erect at the harbor a warehouse, equipped with an overhead crane to load and unload barges and railroad cars.

Shamban Doubles Plant Capacity

W. S. Shamban & Co., Culver City, Calif., doubled manufacturing capacity for production of molded and fabricated fluoroplastic parts.

Westeel Products Building Plant

Westeel Products Ltd., Toronto, Ont., is erecting a $700,000 plant across the road from its present plant. The new plant is expected to be completed early in 1953 for the Sheet Steel Products Division.

Pressteel Enlarges Facilities

Pressteel Co., Berkeley, Calif., manufacturer of lighting fixtures, completed a $500,000 plant and production expansion program.

Coolerator To Open Enameling Plant

A million dollar porcelain enameling plant, which will produce porcelain-on-steel interiors for refrigerators and other parts, will be opened soon by Coolerator Co., an associate of International Telephone & Telegraph Co., New York. All the enameling equipment, including a baffle furnace, dryers and sprayers, are being provided by Ferro Corp., Cleveland, producer of porcelain enamel

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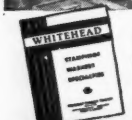

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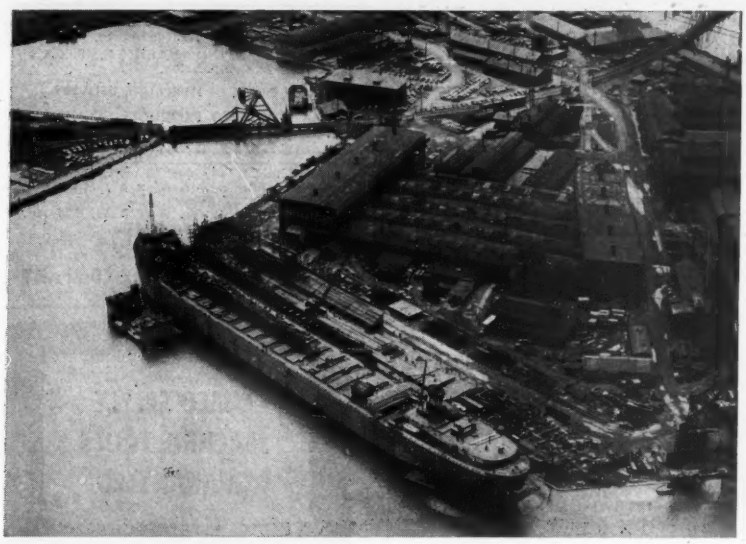

Tight Squeeze Getting Out

When the limestone carrier *John G. Munson* left its berth in the Manitowoc river it had a tight squeeze getting past the narrow railroad bridge at the left of the picture. The 666-foot ship made its trial run on Lake Michigan on Aug. 12 and then joined U. S. Steel's Bradley Transportation Line fleet in Detroit

frit and allied industrial equipment. In addition, Ferro is installing a mill room for grinding and a controlled laboratory as part of a complete porcelain enamel department designed to reduce costs and maintain efficient operation.

Delron Obtains Manufacturing Rights

Sta-Fast Inc., Beverly Hills, Calif., licensed Delron Co. Inc., South Gate, Calif., to manufacture and sell the Fasco spacer, a lightweight bolt spacer. Delron is a manufacturer of specialized fastening devices.

American Pipe To Build Plant

American Pipe & Steel Co., Alhambra, Calif., will construct a plant at Hemet, Calif., for production of jettisonable fuel tanks and mine casings.

Union Buys American-Fort Pitt Spring

Union Spring & Mfg. Co., New Kensington, Pa., purchased American-Fort Pitt Spring Division of H. K. Porter Co. Inc., Pittsburgh. Union Spring will move the plant to New Kensington and will operate it under the name of American-Fort Pitt Spring Division. American-Fort Pitt manufactures both hot-wound and cold-wound springs. Union Spring will continue to make railroad springs, journal box lids and other miscellaneous equipment for railroad cars, steel castings for large machinery building companies and rolling mills, and pressed steel stampings for industrial use. Union Spring also produces items for defense contracts, including springs for guns, tanks and other ordnance requirements.

Bishman Appoints Distributor

Bishman Mfg. Co., Osseo, Minn., appointed Hercules Automotive Sales Co., Minneapolis, as national distributor of its line of barrel pumps in the industrial field.

Fray Machine Opens Export Division

Fray Machine Tool Co., Glendale, Calif., opened its Export Division at 1528 Walnut St., Philadelphia. Joseph F. Rizzo is general manager.

Allis-Chalmers Forms Field Group

Allis-Chalmers Mfg. Co., Milwaukee, organized a field group to provide customers of its General Machinery Division with a maximum of efficient service. The group is operating under the direction of C. W. Schweers, vice president and director of sales.

Western Electric Reorganizes Unit

Western Electric Co., New York, reorganized its manufacturing division into eastern and western operating areas. Reese F. Clifford, vice president of Western and manager of the Hawthorne Works, heads the western area; A. B. Goetze, vice president and manager of the Kearny, N. J., works, heads the eastern area. Clyde C. Randolph is works manager at Hawthorne, while Noble Armstrong is assistant works man-

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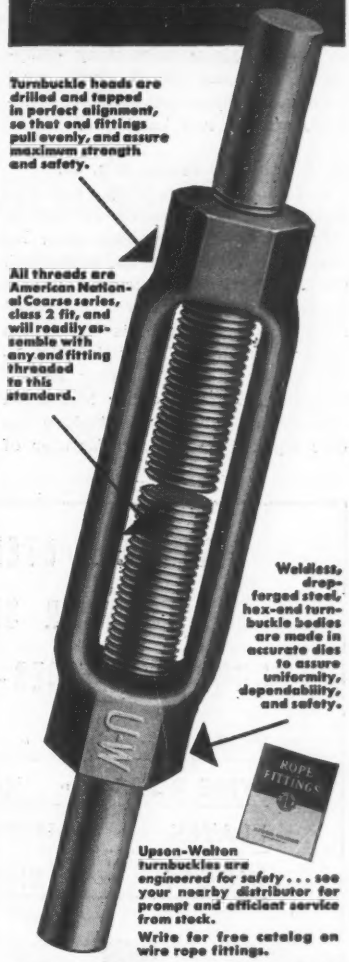
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ager. C. R. Smith becomes works manager at Indianapolis.

Borg-Warner Moves Heat Division

Borg-Warner Corp., Chicago, moved its Norge Heat Division from Detroit to Kalamazoo, Mich. This division is marketing a line of domestic heating equipment and the company plans to expand activities in the plumbing and air-conditioning field as well. Activities of the Norge Heat Division will be co-ordinated with Ingersoll Products Division's manufacturing and engineering organization at Kalamazoo.

Visi-trol Offers New Service

A contract manufacturing service for wood-and-metal fabrications is available from Visi-trol Corp., Detroit, manufacturer of production and quality control equipment. Manufacturing facilities available for this service include metalworking equipment, such as cutoff saws, drill presses, notchers, spot welders, bending machines and bandsaws.

McCulloch Buys Exacto Mfg. Co.

McCulloch Motors Corp., Los Angeles, purchased assets of Exacto Mfg. Co., metal stamping firm, located at 827 W. Olive St., Inglewood, Calif. The Exacto company, which produces $100,000 worth of metal stampings per month, is the fourth major acquisition during the past 18 months by the fast-growing McCulloch organization. Other McCulloch divisions and subsidiaries include Pacific Optical Corp., manufacturer of precision optical elements; Rhodes-Lewis Co., manufacturer of aircraft components; and McCulloch Aircraft Division, helicopter manufacturing.

Aerojet Plans Italian Project

Aerojet Engineering Corp., Azusa, Calif., joined two Italian firms in establishing Compagnia Generale Italjet for the purpose of manufacturing rockets in Italy and selling them to friendly nations of western Europe. The two Italian firms concerned in this three-way deal are: Fiat and Industrie Meridionali Munizioni Affini (Imma). Headquarters of the newly formed Italjet are in Rome, Italy.

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Sellers 6T Tool Grinder, late type.
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Heald #78 Centerless Internal & Cylindrical Grinder, late type, complete.
Jones & Lamson 8 x 31 Thread Grinder.
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Lodge & Shipley 16" x 6' single pulley drive, 12 spindle speeds.
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Blount Model B-3 Special Application Lathe for Turning, 20" swing, 2½" hole in spindle, 54" centers.
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Smith & Mills 32" Shaper, gear box.
Fellows 725 Gear Shaper with Spur Guide.
Fellows 612 Spur Gear Shaper.
Brown & Sharpe 3-26 Gear Cutter.
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Liberty 36" x 36" x 18' Double Housing Planer, 2 rail and 2 side heads.
Lodge & Shipley 16" x 126" centers G.H. Lathe, Timken bearing, complete with taper attachment, late type.
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Hoppers, All-Steel, 70-Ton, Cross Dump
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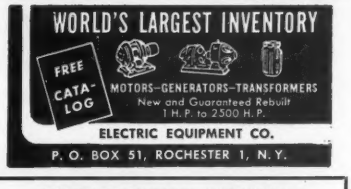
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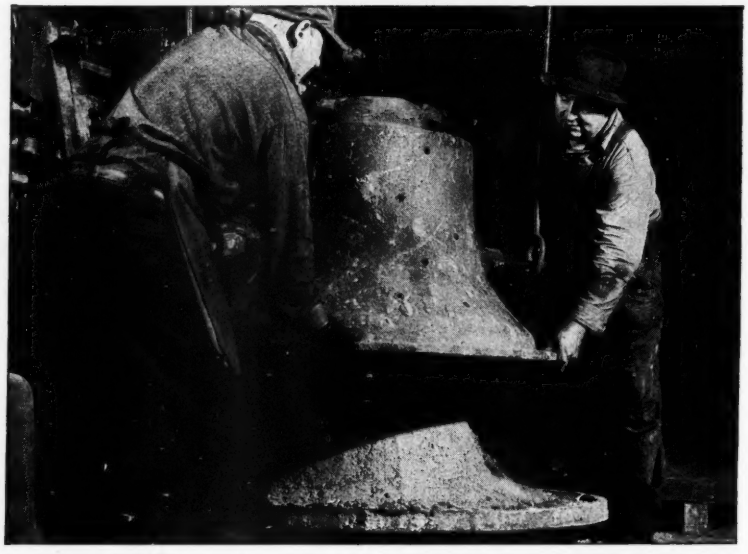
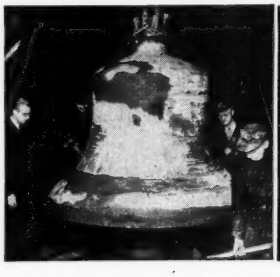
SINCE the middle ages, the art of making bells has changed but little. Much of the work is still done by hand, because each bell presents its own design, size and tonal problems. Bells weighing as much as three tons are not uncommon. The metal is a tin-copper mixture.

Bell-making runs in families. Meneely Bell Co., Troy, N. Y., where these pictures were taken, is now in its fifth generation.

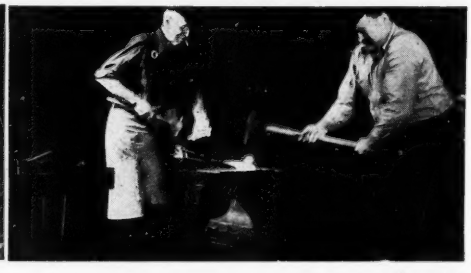


The outer mold is lowered over the inner mold, both of which are made of sand, clay and graphite. The molten metal will be poured to fill the space between

The metal alloy is stirred by hand with green saplings to prevent introduction of foreign metal into the mixture. Then it is poured into the waiting mold



The bell cools, and the inner mold is shaken out. Finishing the bell requires great skill



—*Three Lions*

Workmen hammer out the fittings for the bell. Each has its own clapper, depending in size and design on the desired qualities of the bell

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Odd contour

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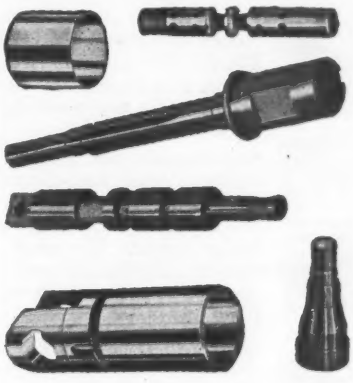

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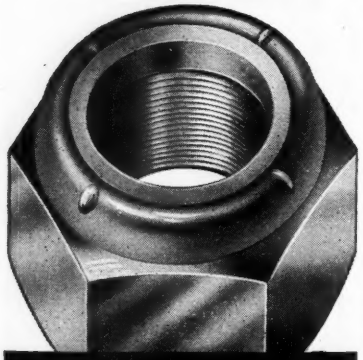

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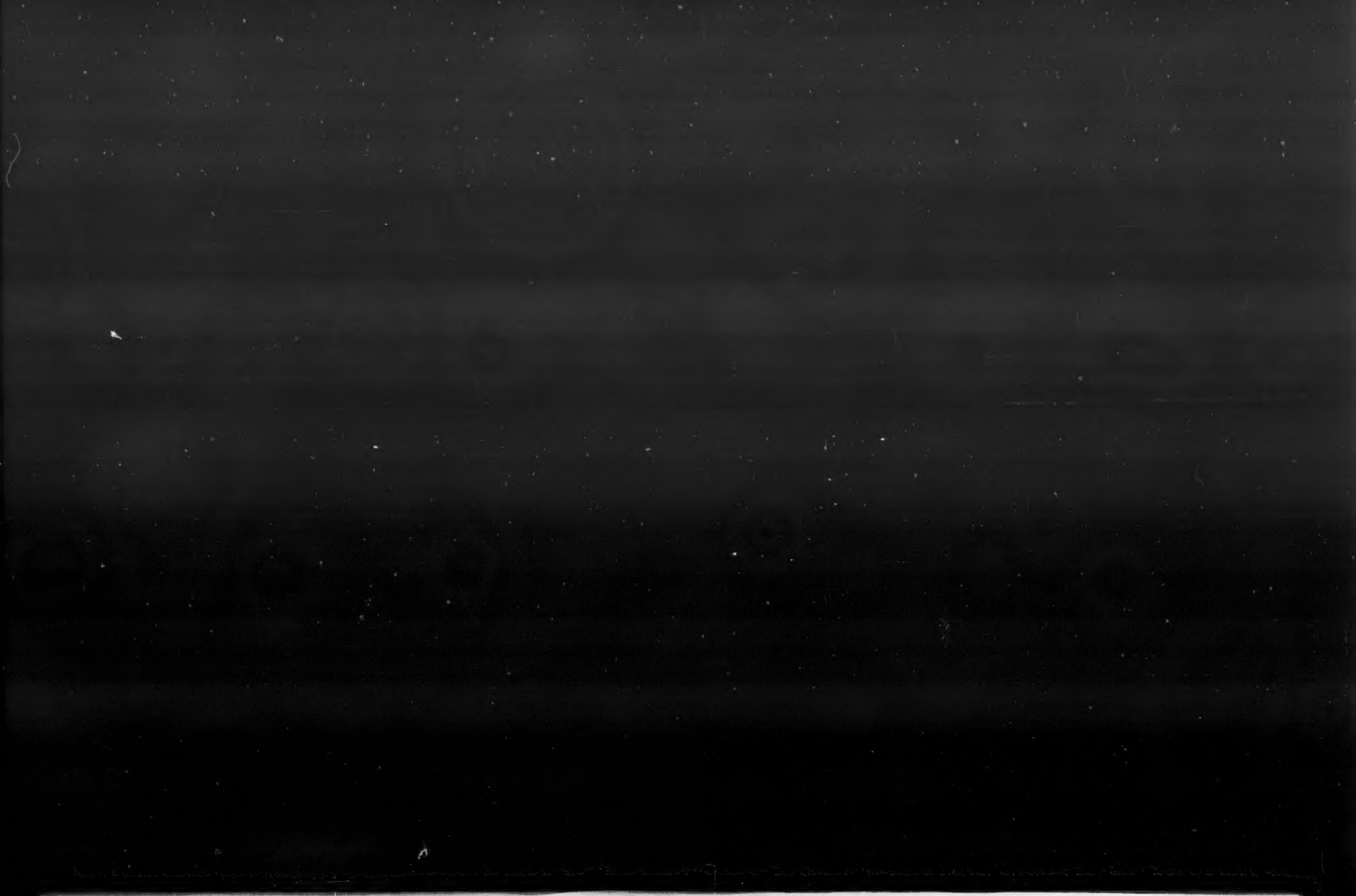
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